

Remote access servers keep users happily connected, according to a *Computerworld* survey. Buyer's Guide, page 83

New mail servers filter junk mail, prevent spoofing. The Internet, page 59

COMPUTERWORLD

The Newsweekly for Information Technology Leaders
News updates, features, forums: www.computerworld.com
May 5, 1997 • Vol. 31 • No. 18 • 152 pages • \$3/Copy \$48/Year

Suits attack Web fundamentals

► **Rulings could set policy for linking between sites**

By Mitch Wagner

THE RIGHT to create links between commercial World Wide Web sites will likely rest on the outcome of a handful of lawsuits, the latest of which was filed last week by Ticketmaster Corp. against Microsoft Corp.

Central to the ongoing litigation (see chart, page 129) are two issues: whether a site administrator must remove a link after being asked to do so by the site's owner; and whether a site owner can direct how a link is presented on a connecting site.

Depending on how the courts rule, site administrators might be required to ask permission before linking to another site, which some fear might drasti-

cally reduce the free flow of information on the Internet. Or users writing a link to another site might be required to make sure that the link respects the vision of that site's creators and doesn't distort the content. They may also be forced to take down links at the site owner's request.

And if links are going to be controlled, it will require a combination of technology—a way

Suits, page 125

By Tim Ouellette



Big-iron-oriented user groups are melting down

their rigid structures and forging a path to newer technologies, such as Internet skills, in a bid to stay relevant.

See groups, page 16

► **Conference attendance is swelling for Cinnamon**

Remote users fight to dial in

By Mindy Blodgett and Kim Girard

WYSTER USA, INC. is forcing 140 sales employees to telecommute as part of a cost-cutting plan to reduce its number of regional offices from 26 to 12.

But telecommuters at the Glendale, Calif.-based company face a host of technological challenges—ranging from problems with telephone lines to a slow corporate network—to that make the daily reality of tele-

Remote users, page 16

Novell blitz will try to restore glitz

By Laura DiDio

IT'S A CLASSIC case of one-upmanship.

Novell, Inc. has planned a spring product blitz and strategic road map announcement for May 19 at New York's Solomon R. Guggenheim Museum.

That is just one day before Microsoft Corp.'s Scalability Day, which will also take place in the Big Apple.

Novell CEO Eric Schmidt will outline short-term product introductions and a road map for Novell's Java, Internet and intranet initiatives.

Novell hopes to enhance its existing operating system, provide businesses with greater network reliability and scalability, and polish the company's tarnished image among customers.

Six users interviewed last week by *Computerworld* expressed enthusiasm about the initiatives and said the delivery

Novell, page 125

All work, no play? Gen X-ers: No way

By Julia King

WHEN 25-YEAR-OLD Ivan Pulley interviewed for a software developer's job at Electronic Data Systems Corp., the managers seemed friendly and the projects

he turned it down. Instead, he went to work for half as much pay at a far less burnout-down software company.

"I immediately had geek bonding with all the people there," Pulley said.

RECRUITING. Take note, employers: Today's twenty-something job candidates are shopping for the right corporate culture, preferably one full of fun activities, camaraderie and cutting-edge technologies. And in today's skintight high-tech

Gen X, page 28

INSIDE THIS ISSUE



Professional P5-133 System

- Intel® 133MHz Pentium® Processor
- 16MB EDO DRAM
- 256K Pipelined Burst Cache
- CrystalScan™500, 26dy Monitor (13.9" viewable)
- 2MB SGRAM, 3-D 64-Bit PCI Graphics
- 1GB 11ms EIDE Hard Drive
- 12X CD-ROM & 3.5" Diskette Drives
- Mini Tower Case
- 104" Keyboard & MS® IntelliMouse™
- Microsoft® Windows® 95
- MS Office 97, Small Business Edition plus Bookshelf® 96
- Gateway Gold® Service and Support for Desktops

\$1449 Business Lease \$54/month

Professional P5-166 System

- Intel 166MHz Pentium Processor
- 16MB EDO DRAM
- 256K Pipelined Burst Cache
- CrystalScan™700, 26dy Monitor (15.9" viewable)
- 2MB SGRAM, 64-Bit PCI Graphics
- 2GB Ultra EIDE Hard Drive
- 12X CD-ROM & 3.5" Diskette Drives
- Mini Tower Case
- 104" Keyboard & MS IntelliMouse
- MS Windows 95
- MS Office 97, Small Business Edition plus Bookshelf® 96
- Gateway Gold Service and Support for Desktops

\$1749 Business Lease \$65/month

Professional G6-200 System

- Intel 200MHz Pentium® Pro Processor
- 32MB EDO DRAM
- 256K Internal Cache
- CrystalScan™700, 26dy Monitor (15.9" viewable)
- 4MB SGRAM, 64-Bit PCI Graphics
- 2GB SCSI Hard Drive with Cables/Kit
- 17X SCSI CD-ROM & 3.5" Diskette Drives
- 3Com® 49100 PCI Ethernet Adapter
- 12-Bay Tower Case
- 104" Keyboard & MS IntelliMouse
- MS Windows NT® 4.0
- MS Office 97, Small Business Edition plus Bookshelf® 96
- Gateway Gold Service and Support for Desktops

\$2809 Business Lease \$103/month

Today's successful business machine isn't complete without a strong technology cog.

PCs that add value by helping companies improve products and services while boosting

**Geared
For
Business** efficiency. More and more businesses are discovering that the best PCs come in cow-spotted boxes. Gateway 2000 understands what business needs, including the importance of a dedicated service and product line.

So we built an organization, Gateway 2000 Major Accounts, Inc., devoted exclusively to making corporate, government and education customers happy. How? By increasing Value of Ownership with high-quality PCs, fresh technology, stable platforms and services designed for their unique needs.

Gateway delivers benefits like toll-free dedicated corporate technical support and customized service options that give you more value over the life cycle of your systems. This combination helped Gateway do business with 8 out of 10 Fortune 1000 companies in the last three years and made us the number-one direct PC vendor on the GSA Schedule.*

Call Gateway today for your PC needs. You'll find we're geared for your business.

**For fiscal year 1996 according to IDC Government.*



Solo 2200 S/S: 166 Portable PC

12.1" SVGA Active Matrix Color Display
Intel® 166MHz Pentium® Processor
with MMX™ Technology
32MB EDO DRAM expandable to 64MB
256K Pipeline Burst Cache
2GB EDO Video RAM
3.5GB Hard Drive
Modular 3.5" Diskette Drive
Modular 6X mini-LINK max CD-ROM Drive
16-Bit Wavetable Sound w/Stereo Speakers
Lithium Ion Battery & AC Pack
PS-Key MS Windows 95 Keyboard
MS Windows 95 & MS Office 97
Small Business Edition plus Bookshelf 96
Gateway Gold Service and Support for Portable PCs
\$3799 Business Lease \$140/mo.



888-888-0382

www.gw2k.com

GSA Schedule #GS-35F-4565G

© 1997 Gateway 2000, Inc. GATEWAY 2000, black-and-white spot design, Crystalball, "G" logo, and "You've got a friend in the business" design are registered trademarks, and Gateway Gold is a trademark of Gateway 2000, Inc. The Intel Inside Logo, Intel, and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. All other brands and product names are trademarks or registered trademarks of their respective companies. All prices and configurations are subject to change without notice or obligation. Prices do not include shipping or applicable sales tax. Many Gateway 2000 products are custom engineered to Gateway 2000 specifications, which may vary from the retail versions of the software and/or hardware in functionality, performance or compatibility. *Leasing arranged by independent leasing companies to qualified commercial customers. Lease payments based on 36-month terms. Leases subject to change without notice or obligation.



**Things Not Meshing?
Call a Company...**

 **GATEWAY 2000**

Levi Strauss caught with its pants down

► Thief walks off with employee data on hard disk

By Sharon Machlis

THINK OF computer security threats, and things such as Internet hacking and password cracking likely come to mind. But at Levi Strauss & Co., sensitive data apparently fell victim to a screwdriver last month.

A hard disk containing the names, birth dates and Social Security numbers of thousands of employees was stolen from the apparel maker's San Francisco headquarters sometime in the past few weeks. Company officials, who don't know if the disk was swiped for its information or simply for the hardware, had to warn 20,000 of its U.S. employees that their personal data may be in the hands of thieves.

That information could be used to apply for fraudulent credit cards in the employees' names or gain access to other information about them. And the stolen hard disk contained bank account numbers for retired workers who opted for direct-deposit pension checks.

for years," said James Wade, director of fraud management at Airtouch Cellular Corp. in Columbus, Ohio, and past president of the Information Systems and Security Association. If a company has strong network security and password protection, "people will eventually figure out it's easier to pick up a screwdriver," he said. "They will find those things you're not looking for."

VALUABLE INFORMATION

Data on a machine can be worth substantially more than the hardware itself — if the thief knows about it.

A laptop stolen from the British Defense Ministry in the early '90s had the entire Desert Storm war plan on it. The theft caused a furor among NATO allies, Wade said. But it is believed that data was never used and the computer was stolen simply as hardware.

How to protect sensitive data from theft:

- Keep it on servers in locked rooms
- Use removable drives that can be locked away at night
- Encrypt and/or password-protect files so data won't be usable if stolen
- Use products that require special tools to detach a device
- Place a lock on or put a "cage" around desktop machines

Patrice Rapalus, director of the Computer Security Institute in San Francisco, plans to ask members what they do when a machine is stolen. She wants to know if they simply restore the data and get a new computer or check to see if the information would be of value to an outsider. "Physical theft is not dealt with as best as it could be," she said.

"This happens a lot more frequently than companies report," Winkler said. "Every security manager I have ever spoken to tells me how they lose PCs on a regular basis." □

Even itself? It's possible the computer's competitors by looking its net. The Enterprise Network, page 91

Buyer's Share: How to use targeted advertising to control costs. Corporate Strategies, page 67

In this issue

NEWS

- 3 Windows 95: Ideas former Popcom executive for business savvy, but for IT.
- 4 HP supports users pay the development costs for specialized upgrades to the HP 3000.
- 6 Bellerose blames its Internet site to concentrate on resolving its ailing mail stores.
- 10 Budget Road: A Car business with software vendor in suits to lay blame for failed human resources system.
- 14 Oracle debate database, users like the change but want the other guy to go first.
- 17 CA Bells SAP R/3 tools with its management suite to ease applications maintenance.
- 33 Larry Ellison drops plans for a takeover of Apple after getting a hostile reaction.

OPINION

- 40 Say what you will about Ellison, he's single-handedly changed the focus of industry conversation, David Moschella writes.
- 70 Handling greedy vendors is tricky, but Leland Allen has some advice.

TECHNICAL SECTIONS

SERVERS & PCs

- 43 Price Cms, turns to an unusual vendor for high-speed storage products.
- 43 Windows NT gets available hardware platforms with new servers from Unisys and Data General.

SOFTWARE

- 47 New technology deluges developers and managers, making it hard to keep up and get work done.
- 49 Oracle wraps workflow, triply-chain management into its apps package.

THE ENTERPRISE NETWORK

- 51 New tools pinpoint problems masked in a mass of performance statistics.

- 51 IBM smoothes promises to make Java and the Internet keys to OS/2's survival.

THE INTERNET

- 59 Shop small: turning Web spin to keep users free of junk mail and spam attempts.
- 59 Searching for viruses at various points on the network secures against the Internet but misses threat from floppies.

CORPORATE STRATEGIES

- 67 Networks creating and multiple telephone lines and high-speed Internet access for business travelers.
- 67 Shoshki Right online by linking networks and data from disparate law enforcement agencies, but it's not easy.

FEATURES

MANAGING

- 72 IT's days are left before the year 2000. How's your conversion going? We have tips.
- 76 Major universities offer executive training during the summer.

IN DEPTH

- 93 People say the darndest things about new technologies. Our game proves it.

BUYER'S GUIDE

- 93 Remote access servers keep users happily connected, according to a Computerworld survey.

CAREERS

- 97 It's payback time for Cobol programmers, who are suddenly back in demand.
- 101 Gateways' security leaves IS professionals, but not in numbers high enough for local businesses.

ETC.

- Company Index 113
- Editorial Letters 36
- How to contact CW 108
- Inside Lines 108
- Stock Ticker 101

FRONT A dark hour

Few companies get to experience their finest moment and their darkest hour within a single six-month period, but that is the fate that has befallen Informix. Last December, Informix rolled out its Universal Server ahead of schedule and well ahead of archival Oracle. Analysts swooned, Informix crowded. Oracle mutated and fumbled for its press releases. But just last week Informix reported a stunning \$440 million quarterly loss on a 30% decline in sales. Customers are speeched.

Informix's return to profitability is important for customers of any database vendor. That's because for the past two years, Informix has acted as the most-effective foil to Oracle. Its parallel processing initiative has spurred Oracle to improve product performance, and Informix has been primarily responsible for goading Oracle's Universal Server efforts. With Sybase floundering, Informix has been the primary obstacle between Oracle and industry dominance. But Informix has suffered from Oracle envy.

As momentum increases, its message increasingly took on the moaning tones of its bigger rival. With Universal Server, Informix tried to sell a vision. But customers buy products, not vision, and object databases are still a fledgling market. The company needs a strong operations executive and a renewed focus on basic blocking and tackling. Informix is down but definitely not out. Unlike Sybase, its problems don't appear to be related to product quality or over-ambitious acquisitions. In fact, Informix can look in a not too distant mirror for inspiration. It was only six years ago that Oracle suffered such severe growing pains, it had to sell part of the company to a Japanese steel firm to raise money. The company cut costs, brought in Ray Lane as president and refocused on its core markets. The rest, as they say, is history.

Paul Gillin, Editor
Internet: paul_gillin@cw.com

Pentium II delivers speed to desktop

• Hardware vendors await 233- to 400-MHz chip

By April Jacobs

WHEN INTEL CORP. unveils its Pentium II chip this week in New York, hardware vendors will be waiting in the wings to workstations, servers and high-end desktops based on Intel's successor to Pentium Pro.

Sources close to Santa Clara, Calif.-based Intel said the Pentium II features speeds of 233 to 400 MHz.

Initially, it will offer a cache bus speed of 133 MHz, which is two times faster than current Pentium systems but slower than the Pentium Pro's 200-MHz bus speed.

That shouldn't affect the Pentium II's overall performance. Intel compensated with design tweaks, such as tighter integration of the CPU, bus and cache, so the Pentium II is still faster than Pentium Pro, said Linley Gwennap, an analyst at Micro-Design Resources, Inc. in Sunnyvale, Calif.

PC users should benefit from the new chip's design because it will allow for faster graphics ap-

plications and Internet-related applications.

"We are always looking for things that can bring more powerful tools to the desks of people who make decisions," said David Pensak, a senior research fellow and principal consultant on advanced computing technology at Du Pont Co. in Wilmington, Del.

Although ordinary office applications won't need the Pentium II power immediately, number crunching applications could use more processing power, Pensak said. "Data mining is intensive, for example. [Those users] need every bit of speed you can give them," he said.

Pensak said that if Pentium II moves can pack the power of a \$45,000 workstation at a much lower cost, he could put more workstations on users' desks.

IN THE WORKS

Dell Computer Corp., Digital Equipment Corp. and Packard & Bell-NEC all plan to unveil systems based on the Pentium II. Digital and NEC plan to have



machines available immediately, and Dell will launch servers and workstations later this year.

Dell plans to launch its new workstation business with Pentium II-based machines aimed at computer-aided design and financial applications. That is a good choice, Gwennap said, because users should get better performance with graphics and financial applications.

Digital plans to launch a high-end desktop in 233- and 400-MHz versions based on the Pentium II. The models will have an enhanced version of Client-Works systems management software that helps users track assets and configure their desktops.

Vendors will be dealing with a different market segment with the Pentium II, which will force them to use cache and CPU configurations dictated by Intel, Gwennap said. But in the long run, that shouldn't hurt end users, he said, because it will let vendors bring products to market faster in some cases and ease laptop design woes by freeing up more space. □

THE FIFTH WAVE BY RICH TENNANT



"We're researching molecular/digital technology that moves massive amounts of information across binary pathways that interact with free-agent programs capable of making decisions and performing logical tasks. We see applications in really high-end dashboards."

By Justin Hubbard

MICROSOFT CORP. this week will introduce a server package designed to ease management of intranets and World Wide Web sites. It is based on Windows NT and the company's Internet Information Server.

Site Server 2.0 includes the Content Replication System, server-side software that automatically replicates content across multiple Web servers.

Users must license a separate copy of Site Server for every Web server that sends or receives replicated content.

Marrionett Information, Inc. in Washington plans to evaluate Site Server 2.0 for use on its Web site, which the company is migrating from Unix to Windows NT.

"Anything that helps manage a huge site like ours we're interested in," said Bill Shellenberg, webmaster at Marrionett. "Our site has 2,000 pages of static

[Hypertext Markup Language] pages now. It's time for us to move into a more dynamic environment where we can update information about hourly daily."

Usage Analyst, a tool that analyzes Web server logs, comes with the server package. The package also comes with Site Analyst, a tool that presents a visual diagram of a site and lets users inspect links and the structure of sites.

The Enterprise Edition of Site Server adds features for Internet commerce borrowed from Microsoft's Merchant Server, which the company will discontinue as a stand-alone product.

Site Server 2.0 costs \$4,999 and will be available this summer. Evaluation software will be available at Microsoft's Web site later this month. Pricing for the Site Server Enterprise Edition starts at \$4,999. □

Come visit our Web site @ Computerworld

"WILL YOUR E-COMMERCE STRATEGY SURVIVE? Take our quiz and rank your company's electronic commerce IQ." (www.computerworld.com)

"COMING, BILLS OF THE CENTURY: A skill everyone had written off as dead is back with a vengeance — with lots of job opportunities and paychecks to be had. (www.computerworld.com/careers)

Daily news updates: (800) 340-7742

*If you need to know what's going on in the industry but aren't near your PC, get a recorded update at our toll-free number.

Users complain about pain of more domains

By Matt Hamblin

AN INTERNATIONAL accord to bring seven more domain names to the Internet is seen by some business users as a prescription for chaos.

"I'm concerned about the confusion it might cause among my customers," said Steve Dieringer, vice president of emerging markets at Banc One Corp. in Columbus, Ohio.

For example, Dieringer said, a Banc One competitor could register the name www.bancone.com, firm under the provisions of the accord signed last week. That would confuse Banc One customers who now use www.bancoc.com.

"That confusion just means more business for the World Wide Web search firms and directory services," Dieringer said. And it could be a boon for the trademark attorneys hired to settle disputes about uniform resource locators, some analysts said.

"God, don't tell me that store and firm are going forward," said Carl Leubsdorf Jr., network chief at Calvert Group, a mutual fund company in Bethesda, Md. "Anybody doing Web-based

work is barely keeping up with HTML and software and hardware changes, and this is just another thing to worry about."

Leubsdorf said despite all the predators who hijacked .com domain names in 1995 in order to sell them to big companies with similar names, users today still have a good chance of finding a company's Web site by using the company's name with a .com after it.

MORE HEADACHES

"I'm not sure how these new names help or what they get me," Leubsdorf said. "It's those headaches."

But a spokesman for MCI Communications Corp. in Washington, which was one of the 36 signers of the International Ad Hoc Committee accord in Geneva last week, said the pact will mean fewer squabbles over names and will increase the supply of available names. There are already more than 1 million Internet addresses that end with .com, analysts said.

NO MORE MONOPOLY

The agreement also takes the registration of domains out of the sole hands of Network Solutions, Inc. in Herndon, Va., by creating a system of 35 registration agents worldwide. Network Solutions will lose its monopoly in registering domain names next year.

The new registration scheme also brought fire from analyst Ullas Naik at First Albany Corp. in Boston. "If there are 35 registrars issuing names at the rate of one per minute, they'll have to talk to each other. Unless they're linked well, that's a total nightmare," he said. □

PROPOSED DOMAIN NAMES

Domain	Classification
.firm	Businesses or firms
.store	Businesses offering goods to purchase
.web	Entities emphasizing activities related to the Web
.arts	Arts and cultural groups
.rec	Recreation/entertainment
.info	Information services
.nom	Individuals

COMPUTERWORLD

For this and other related links, point your browser at www.computerworld.com/links/proposeddomainlinks.html

—Master of your domain: Conflicts and legal issues of Internet domain names. www.digitallife.com/computerworld/rybar/domain.html

As IS managers move from planning their year 2000 conversions to doing the actual repairs, they're finding they have to tackle a messier and more complicated job than they anticipated. In *Managing* (page 70), learn from the experiences of three conversion leaders. And in *IT Careers* (page 97), see why managers can't find the bodies to do the work.

SWEATING THE DETAILS

John Proffitt at Shredco helped of Ohio last year rewrite on his first year 2000 conversion because his staff wasn't getting detailed enough questions about the code being fixed.

LEGACY SYSTEMS

New Wackenhut CIO must bring security giant into a global arena

By Thomas Hoffman

AT PEPSICO, INC., Diego Saenz oversaw the launch of a client/server system that boosted the beverage maker's Latin American market presence.

And as an Andersen Consulting partner, Saenz helped Burger King track customer traffic at 5,000 restaurants to fast-food supplies wouldn't go to waste.

It was that kind of business acumen that attracted the senior management of security giant Wackenhut Corp. to sign on Saenz as the company's chief information officer.

A RE-ENGINEERING EFFORT

Since coming on board at the Coral Gables, Fla., company three weeks ago, Saenz has been charged with replacing and re-engineering Wackenhut's legacy-bound infrastructure in an effort to support the company's recent diversification into food services and other areas.

At Wackenhut, "we know we're behind the [technology] curve," said Saenz, a longtime Floridian.

Wackenhut's modernization effort is the kind of undertaking Saenz has faced in the past.

As PepsiCo's information technology chief in Latin America, Saenz oversaw the November

1995 launch of Pepsi System's client/server-based sales and distribution system that streamlined customer orders and boosted the beverage maker's distribution in the region 35% within 12 months.

At Chicago-based Andersen Consulting in 1989, Saenz helped Grand Metropolitan PLC's Burger King unit roll out a nationwide point-of-sale sys-

tem that is entirely mainframe-based.

Saenz said his senior management sees the need to install client/server systems to support a diversification strategy.

"For us to compete in the 21st century, we need to be able to win a job based on our ability to deliver information to our customers," he said.

Saenz will be challenged

"For us to compete in the 21st century, we need to be able to win a job based on our ability to deliver information to our customers."

— Diego Saenz, Wackenhut



tem to 5,000 restaurants that extended nightly polling from 70% of its outlets into the "high 90%," Saenz said.

The system, which cost about \$10 million, helped reduce waste and paid for itself in 18 months.

Wackenhut's information systems infrastructure is now the "before" picture.

The company's application

to help support Wackenhut's double-digit revenue growth. The company has nearly doubled its profit margins in recent years, to 2.5%, in part by growing its brand-name security services while going into new lines of business such as corrections services, said James S. Schmitt, president of Westcountry Financial, an independent research firm in Somers, Calif. □

HP bid to have users fund certain HP 3000 improvements wins approval

► Only users who need specific tweaks to be taxed

By Jalimar Vijayan

NEWELL-PACKARD CO. is taking a novel approach to fund some upgrades on its aging HP 3000 platform: Ask users to foot the bill.

In response to requests from a small segment of its customer base for some specific—and in some cases rarely needed—enhancements to the aging platform, HP is suggesting customers pay for the development themselves.

Palo-Alto, Calif.-based HP is willing to identify and work in an advisory capacity with third-party vendors in delivering the enhancements, said Cathy Fitzgerald, worldwide marketing

manager at the company's HP 3000 business unit.

"We prefer that the business proposition come from the customers," Fitzgerald said. "There are a lot of third parties who are willing and able to make these functionalities available" with which HP will work, she said.

And company officials said HP will continue to deliver a series of already scheduled enhancements on an as-needed basis (see story at right).

The latest idea, which was first aired at a recently concluded user meeting, is aimed at providing very specific functions to the MPE/IX operating system for those users who need it, without taxing those who

HP 3000 WISH LIST

Enhancements on the way:

■ TurbolImage scalability improvements

■ Support for multiple job queues

Enhancements users would like:

■ Disk mirroring

■ MPE/IX on workstation hardware

don't, Fitzgerald said.

Certain enhancements that HP has no immediate plans for

— such as better support for disk mirroring, improved interoperability between the MPE/IX and Posix operating systems, and providing MPE/IX on workstation hardware — could be candidates for this sort of scheme, observers said.

The scheme will pump additional funds into third-party software vendors to continue developing around the platform, observers said.

But the idea is still evolving and will take some effort to pull off, said Tony Fumival, president of SDI/Software, Inc. in Buffalo, N.Y.

"It is a very creative idea . . . but it is a very complex issue to set up," he said. "If it is going to happen at all, it has to happen from the users."

MORE THAN A WHIM

"HP is just making sure that some of these enhancements are what a broad user base wants and not just the whims" of a small section of users, said Joe Gesser, chairman of a special interest group for the HP 3000 in Langhorne, Pa.

The proprietary HP 3000 is one of HP's oldest and most popular midrange platforms. Although the platform still garners extreme loyalty from its installed base, HP recently has been focusing most of its development and marketing dollars on newer technology such as Unix and Windows NT.

"It is a matter of HP prioritizing what is important for their customers," said Ron Seybold, editor of "The 3000 NewsWire" in Dallas.

They are working hard on extending the limits of an operating system that started more than 20 years ago, and they are being realistic about what they can deliver," he added.

As part of its proposal, HP is suggesting that user groups, such as interest, and special interest groups within the 3000

Debating this week

HP is getting ready to announce a high-end addition to the HP 3000 lineup.

The new Super 990 system, which HP will announce next week, is based on the 64-bit PA-8000 chip.

The so-called corporate business systems are being aimed at high-end data center applications and will feature support for up to five processors, up to 3M bytes of second-level cache and a new I/O bus.

According to a source close to the company, the systems will offer a 25% to 25% performance increase over existing systems.

The company is also increasing scalability of its Series 996 to support up to 12 processors. The system currently tops out at eight processors.

The announcements are the latest in a series of planned enhancements that HP is bringing to the HP 3000 platform. Others include support for the latest generation 4GB byte channel-based connectivity, support for the next-generation PA-8000 and PA-8500 chips, and year 2000 fixes.

— Jalimar Vijayan

Informix aims to restore confidence

► Users aren't rushing to jump ship on vendor

By Craig Stedman

THE FIVE YEARS of Informix Software, Inc.'s stunning \$540 million first-quarter loss, CEO Phil White last week acknowledged that prospective customers might be scared away unless the company comes up with a fast fix.

White said in an interview that he doesn't plan to cut back Informix's database development plans, and he predicted sales would rebound to some degree in the second quarter.

But first, Informix has to go out and see if users "will have confidence in us and will buy our products," he said.

earlier, when Informix earned a profit of \$15.9 million.

Informix's chief financial officer quit after just four months on the job.

White's best-case scenario is for Informix to at least break even in the fourth quarter.

Several Informix users say the Menlo Park, Calif., company's woes are cause for some concern but won't change their plans for sticking with its databases.



PHIL WHITE, CEO OF INFORMATIX SOFTWARE, INC.

"We have to pull this thing together quickly"

Informix needs to put its marketing eye back on its mainstay OnLine relational databases instead of the new object-enabled Universal Server, said Brian Kilcourse, chief information officer at Longs Drug Stores, Inc. in Walnut Creek, Calif.

Informix was "very focused on finding a way to get us over to Universal Server," Kilcourse said. "They seemed to get so enamored of their new technol-

ogy that they forgot most businesses are still running applications on relational data." Longs doesn't expect to need Universal Server for "well over a year," he added.

White said Informix is taking steps to put its sales focus back on the OnLine products. They include the following:

■ Development of a transaction-processing version of Informix's OnLine XPS parallel database, which currently is limited to decision support users.

The transaction release is due to ship in the third quarter.

■ A re-emphasis on relational performance via a return to running industry-standard benchmarks. Informix stopped benchmarking the OnLine software early last year, a move that White said "was a major error."

The company also is recentralizing its sales and marketing units, undoing changes made just last year. Informix's aim now is to return to post-recession that should be "easier to fix than if we had to go out and build products" to recover, White said.

But Informix "hit the big speed bump at a real bad time," said Stas Doolberg, an analyst at Forrester Research, Inc. in Cambridge, Mass. "They basically have to walk away from their advanced product and focus on stuff where they don't have much of an edge." □

base gather customers who are interested in specific enhancements. They could then pool development funds.

This isn't the first time HP has made unusual arrangements with its HP 3000 base.

For instance, when the company upgraded its TurbolImage database to Image/SQL, it didn't charge customers up front for the added functionality. Instead, it let customers amortize the costs by charging them extra for their annual support □

Corrections

In the chart accompanying the story "Oracle vpp uses a most mysterious" in the April 14 Computerworld, the date of discontinuation of support for Oracle 10.4 and 10.5 should have read June 30, 1998.

In the story titled "Upgraded-mission" in the April 14 Computerworld, the comments regarding the Group Application User Group (GAUG) Conference focusing on year 2000 migration issues

and upgrading to Oracle Applications 10.3 should have been attributed to GAUG Vice President Karen Gilbert, not GAUG President Michael Block.

The pricing information listed for NCompass Labs, Inc.'s ScriptActive in the April 7 Computerworld was incorrect. It indicated that the plug-in is free for a 30-day evaluation period and costs \$21 for a single-user license after that.

PRESSURE IS ON

Most current users aren't expected to jump ship, White said. But rival Oracle Corp.'s effort to frighten off new prospects "is going to be a big issue," he added. "That's why we have to pull this thing together quickly and show people that we are going to be around."

The first-quarter loss was three times larger than financial analysts predicted after a warning by Informix in early April (CW, April 7). Revenue plummeted 34% to \$153.7 million, down from \$204 million a year



**Send Us Your
Toughest Program And
We'll Analyze It For FREE!**

Take The CA Year 2000 Challenge Before It's Too Late.

Send Us Your Toughest Program And We'll Analyze It For FREE!

This special offer can be the first step you take to prepare for the biggest challenge of your career.

At Computer Associates, we've leveraged over two decades of experience in building tools for application development, maintenance and migration to create a solution for your Year 2000 problems. CA Discovery 2000 provides the

only end-to-end solution for all aspects of your compliance effort, including analysis, conversion, testing and life-cycle management. And, because our Impact assessment tool runs under MVS, VSE

and Windows and can access all of the most popular source library formats, you can start your Year 2000 Initiative today.

Behind our CA Discovery 2000 solution stands a Professional Services

team that is experienced in all aspects of Year 2000 compliance. After all, as the world's leading independent software company, we have more experience reengineering legacy apps than anybody. And with a 20-year track record of success and nearly \$4 billion in revenue, our clients know we'll be around long after the Year 2000.

Preparing your applications for the next century may be the most important job you've ever faced. Start now and turn the biggest challenge of your career into a triumph.

**Call us today toll-free
at 1-888-4-200078
or visit www.ca.com**



CA 2000
TAKE THE CHALLENGE

**COMPUTER[®]
ASSOCIATES**
Software superior by design.

Off-line business reversals can undercut or spike online projects

► Retailer Express shuts site after 7-month run

By Mitch Wagner

WOMEN'S CLOTHING Retailer Express, once a showcase site for Internet commerce, has stopped offering sales online after just seven months, saying it needed to focus on its ailing core business of mall stores.

"We fully expect we will be doing business again someday on the Internet," said Les Duncan, chief information officer at Express in Columbus, Ohio.

"Right now, though, we have to turn our full hearts and minds to our physical stores."

Express officials maintain that the company's online effort was a success. It was very educational, and it met revenue goals, Duncan said — although he wouldn't divulge those figures.

The nearly 800-store retail chain's trip in the express lane

of the information superhighway could happen to any company, users and analysts said.

Upper management often buys in to an electronic-commerce project, seduced by the notion of easy money, and is apt to abandon the project when corporate priorities shift.

"Retailers that have invested in Internet sites need to be patient," said Vince Barriero, a senior vice president and CIO at The Sharper Image, Inc. in San Francisco.

"There's a general expectation that there's a lot of money to be made from retail, and that's not the case. This will be a evolutionary process, not a revolutionary one."

When the first retail sites appeared on the Internet three years ago, advocates predicted that companies would be able to make lots of fast, easy money.

The argument was that the cost of doing business online is cheap, especially compared with brick-and-mortar storefronts or direct mail.

TOTAL COMMITMENT

But experience has proved far different. Businesses are finding it takes a lot of money, commitment and time to attract customers online. Total revenue from online shopping is expected to be a mere \$1.1 billion this year and \$6.6 billion in 2000, according to Forrester Research, Inc. in Cambridge, Mass.

Express went online with its retail sales in July 1996, relying on IBM to manage its online store as part of IBM's World Wide Web online commerce project.

But Express shut down its online sales site seven months later. Its parent company, The Limited, Inc., which also owns Victoria's Secret — has been set by financial problems at its

Sales online aren't everything

"If you're making close to a small profit on the site, there's less of a reason to shut you down," said Vince Barriero, a senior vice president and CIO at The Sharper Image. "We try to keep the expenses relatively low."

But John Nylander, director of information services at the International Trade Unit of Hannover Direct, Inc. in San Diego, said revenue from a site isn't the only measure of success.

International Trade, a men's clothing catalog company, tracks the number of catalogs ordered online. Nylander said approximately 50 percent of orders come from online. "We don't want to spend, with about 2% of those catalog orders resulting from repeat, about double the rate for other forms of catalog response."

"That doesn't sound like much, but it's very responsible for catalog mail," he said.

Marriott International gave its requests for information about online availability for every reservation booked through its online site, said Bill Schallenberg, Web publisher at Marriott. "We expect that a lot of these are generating probability and then picking up a phone and calling on Reservations," he said. — Mitch Wagner

women's apparel chains and earlier this year announced plans to shut down 200 stores nationwide. The Limited replaced Express' president and chief financial officer in January, following a December in which Express sales were down 8% from the previous year.

Users and analysts said the retailer's departure from online business might not prove a huge setback for the company.

"We are still early enough in this arena. Some people will be able to sit back and wait, and I don't think there are barriers to late entry," said Bill Schallenberg, World Wide Web publisher at Marriott International, Inc. in Bethesda, Md. "On the other hand, as some industries take off online, there will emerge winners and losers. They will present barriers to entry for competitors in the future." □

SHORTS

Andersen wins dispute

A federal jury in Fort Smith, Ark., has awarded Andersen Consulting \$1.8 million — the full amount of its claim for outsourcing fees and expenses related to the cost of furnishing Beverly Enterprises, Inc. with a business office system. The jury also found that Chicago-based Andersen wasn't liable on charges of negligence, fraud, breach of contract and breach of fiduciary duty brought by Beverly, a nursing home operator in Fort Smith [CW, March 3]. Beverly had sought restitution of the \$11.3 million it paid to Andersen for the software system and \$30 million in punitive damages.

Coalition pushes NC standards

A coalition of major international institutions, led by some of the world's largest banks, last week announced the Client Network Computing Coalition, Inc., a user group formed to pressure network computer vendors to create and adhere to a comprehensive set of policies, practices, specifications and management strategies for the devices. The group will present its progress on the specifications at the IT Hardware '97 Symposium, June 10 to San Jose, Calif.

Online services settle with FTC

America Online, Inc., CompuServe Corp. and Prodigy, Inc. have settled with the Federal Trade Commission (FTC) over allegations that their free-trial offers led to unexpected charges for some customers. The proposed consent agreements to settle the charges — which aren't an admission of a legal violation and which include no financial payments — also cover FTC allega-

tions that the online services' electronic debiting practices violated the Electronic Funds Transfer Act. The agreements would require the services to get written permission to bill customers electronically, disclose cancellation methods and notify customers before changing the amount they debit from electronic accounts each month. America Online would be required to disclose how it calculates fees and to launch an education program on electronic payment systems.

Lotus 1-2-3 sounds bug alert

Lotus Development Corp. in Cambridge, Mass., announced that four of the more than 200 @ functions in the new 32-bit version of the firm's 1-2-3 spreadsheet have bugs that could result in incorrect calculations. But the flaws show up only in spreadsheets with more than 500 columns and then only if a spreadsheet contains blank cells. The affected functions are: @IRR (internal rate of return), @MIRR (modified internal rate of return), @NPV (net present value) and @NSUM (sum of every nth value). Users can work around the errors by using the 1-2-3 spreadsheet software. The fix will be available May 12 at www.lotus.com/123, according to Lotus, or by calling (800) 872-3387, ext. D566.

Keyboard verdict thrown out

A federal judge has thrown out a \$5.3 million jury verdict against Digital Equipment Corp. in a recent computer keyboard-injury case. The decision was reached after new evidence was submitted that revealed that the plaintiff's injury wasn't caused by repetitive motion but by a muscular condition in her neck. The original \$5.3 million award was the largest ever in such cases.

SET technology makes 'net buy

The world's first Secure Electronic Transaction (SET) involving SET technology from multiple vendors took place last week in Singapore, when a bank executive used his Visa card to make multiple purchases over the Internet. The transaction used a payment gateway developed by IBM for Citibank and digital certificates from VeriSign, Inc. in Mountain View, Calif.

Sun posts Java fix

Sun Microsystems, Inc. has put out a fix for a security flaw in its Java programming language that would let a hacker send hostile components to another user by assuming the identity of a trusted party. The fix has been posted on Sun's World Wide Web site at www.sun.com.

Sybase renews RAD tool

Sybase, Inc. this week will release a new version of its Rapid Application Development (RAD) tool, Power++ 2.0, formerly named Optimizer+. The version has more than 20 new features and was designed to build multistep databases and Internet applications.

SHORT TAKES Oracle Corp. will release the latest version of Developer 2000, which was designed to let users convert client/server applications to Java applets without writing new code. ... IBM has made available a free add-on tool for its NetWare for SAA 4.0 software that lets users download mainframe-based files from a Web browser. Files On-Demand is available at www.networking.ibm.com/fof/fofprod.html.

Oracle7 vs SQL Server

Features	Oracle	Microsoft SQL Server
• Runs from Laptop to Data Center	YES	NO
• Cross Platform Support	90+	NO (NT Only)
• Web Services and Database Integration	YES	NO
• Client Support: Full Time/Thin Client	YES	NO
• Multiplatforms: or Standard C	From 1 to 400+ processors	From 1 to 8 processors
• RDB Support	YES	NO
• Function Query, OLTP, OLAP	YES	NO
• Data Warehousing	YES	NO
• Remote Replication	YES	NO
• Enterprise Replication	YES	NO
• Remote-based Customization	YES	NO
• OLAP: Multidimensional Data Processing	YES	NO
• Video Streaming and Playback	YES	NO
• Text Storage and Search	YES	NO
• Spatial Data	YES	NO

Oracle7.™ From laptop to data center. From NT to MVS. From relational data to all data. From data warehousing to OLTP to electronic commerce. From client/server to the Web. Think about it and then call Oracle at 1-800-633-1071, ext. 11342. Or find us on the Web at <http://www.oracle.com>

ORACLE®
Enabling the Information Age™

Comparison between Oracle® Parallel Server and Microsoft SQL Server based on manufacturer's published data.
©1997 Oracle Corporation. All rights reserved. Oracle is a registered trademark and Oracle® and Enabling the Information Age are trademarks of Oracle Corporation.
All other company and product names are the trademarks of their respective owners.

Bay, Novell place bets in Las Vegas

By Bob Wallace and Laura DiDio

RELEGATED vendors Bay Networks, Inc. and Novell, Inc. are betting that major announcements at the Networld/Interop '97 show in Las Vegas this week will help reverse their fortunes.

Bay is putting its chips on a new networking vision that it hopes will help retain existing users and win new ones. Novell is rolling the dice with Border Services, an integrated package of Internet/intranet services.

Bay is struggling to wrest user mind share away from Cisco Systems, Inc., 3Com Corp. and Cabletron Systems, Inc.

Novell's dominance in network operating systems is under siege by Microsoft Corp.

Bay CEO David House is expected to detail Bay's new networking vision and strategy called Adaptive Networking. No further details were available.

Bill Host, assistant regional

administrator at the General Services Administration in Boston, has a wait-and-see approach to Adaptive Networking.

"We're not jumping on the Bay bandwagon until they're shipping [new] tried-and-true products," Horst said. "We're disappointed with their lack of long-term vision to date and will naturally be very skeptical of any new direction."

"We need to know where they're headed with [basic] and Layer 3 switching," said Earl Perkins, manager of network projects at Energy Services, Inc., a Gretna, La., utility and longtime Bay customer. Layer 3 switches have built-in advanced routing functionality.

Since Bay announced its first networking direction 18 months ago, the company has been late shipping key switching products, has turned in financials that disappointed analysts, had announced a sweeping reorganization, and has lost its CEO,

BAY'S UPHILL BATTLE					
Worldwide switched Ethernet market leaders					
Vendor	Q4 1996	Q1 1997	Q2 1997	Q3 1997	Q4 1997
Cisco	34.9%	35.2%	34.6%	33.9%	34%
3Com	18.5%	14.2	14.6%	15.5%	19%
Cabletron	8.4%	8.1%	12.5%	12.8%	14%
Bay	18.9%	13.2%	13.3%	9.4%	6.9%
Total revenue	\$493.6M	\$446.5M	\$534.5M	\$544.5M	\$146M

Source: Data from Strategy Analytics, Inc.

chief financial officer and much of the rest of its management and engineering staffs.

BORDER SERVICES

Novell will detail Border Services, which includes firewall and proxy server caching capabilities and coming Wolf Mountain clustering technology.

New in the Border Services announcement will be the inclusion of Cyber Patrol Internet security filtering technology as part of an agreement with Microsystems Software, Inc. in Framingham, Mass.

Cyber Patrol, used in concert with Border Services, enables filtering capabilities, will provide businesses with managed

access to Internet resources.

Novell also will beef up the capabilities of Novell Directory Services by letting it access mainframe data and applications, Joe Marengi, the company's president and chief operating officer told Computerworld last week.

Border Services will ship at the end of summer, and Wolf Mountain is due out next year.

In its first release, Wolf Mountain will let users link up to four servers together for greater network reliability and scalability. □

Networking challenges

► Survey says more staff needed to keep pace

By Bob Wallace

THE ENTERPRISE NETWORK has become instrumental to a company's competitive advantage and is at the core of business operations. But users say they will have to staff up to keep pace with the fast-expanding network.

Those were among the key findings of a study sponsored by Computerworld and IDG Research due to be released this week at Networld/Interop '97 in Las Vegas.

The 183 respondents—all of whom are members of the New York-based Technology Managers Forum International Association—are Fortune 1,000 companies with an average of \$5.5 billion in annual sales. They said they plan to spend an average of \$16 million this year on network computing and have an average network that comprises 7,200 nodes and links 64 geographic locations.

Managing these networks has become more expensive for users. As a result, 85% of respondents said overall information technology costs for their enterprise networks have increased.

Staffing also has become a huge issue. Respondents said the average ratio of users to technical support personnel was 104 to 1. More than half the respondents said they can't support enterprise networks with

their current staffing levels.

And a sizable chunk of about \$1.5 million in average IT spending goes toward Internet efforts and intranet development. On average, these same firms said they are spending \$330,000 on Internet projects and \$225,000 on intranet development.

ONLINE INCREASES

Online projects are taking up a lot of bandwidth among the respondents; 90% have World Wide Web sites in place or under development. The most frequently cited Internet uses were to give users access to business-related data and electronic mail.

Eighty-nine percent of the responding organizations said they currently use or plan to use intranet to transmit internal corporate information. But business functions, such as sales and marketing databases, and traditional IT applications, such as inventory, order entry and contact management, ranked low among listed uses.

Despite these projects, more than half of the respondents said they had difficulty defining the strategic opportunities and benefits of Internet access.

The study also said users are moving away from proprietary architectures. The study cited TCE/IP as a challenge and said the use of Novell, Inc.'s IPX will drop substantially. □

Novell's Marengi seeks turnaround

By Laura DiDio

JOE MARENGI is in the hot seat—but you'd never know it.

Novell's president and chief operating officer is besieged by questions on whether he will stay on now that Eric Schmidt has taken over as CEO, and what his strategy is for jump-starting sales.

Marengi last week only returned and that he has no immediate plans to leave.

"I have a lot of blood, sweat and tears in this company. I want Novell to be successful. I'm here to get the business to where Eric wants it to be, and then I'll see," he said.

Most immediately, the two will look at the operating revenue in light of Novell's second-quarter financials, which it will post on May 28. Two weeks ago,

Novell said sales for that quarter would range from \$300 million to \$335 million. That is a 12% to 20% drop from first-quarter sales of about \$380 million.

But there is a silver lining: sales expectations still represent an increase of roughly 72% over the \$488 million in revenue during the same quarter a year earlier. Similarly, the Provo, Utah,

company predicts a "slight profit" for the just-ended quarter; in last year's fiscal second quarter, Novell posted a loss of \$55.1 million.

"Some of the drop-off is attributable to anomalies like Unix licensing royalties that have disappeared since we sold off Unix-

ware. But Netware [intranet] sales are holding their own and remain steady," Marengi said.

There are bright spots.

Novell's recent partnerships

with companies, including Net-secure Communications Corp., Oracle Corp. and Sun Microsystems, Inc., give Novell a much-needed boost, said Jamie Lewis, president of Burton Group, Inc., a Salt Lake City consulting firm.

But Lewis said Novell must also address its "continuing lack of an application framework that [will] unify Novell's cross-platform services, IntranetWare and GroupWise product lines."

Marengi conceded that Novell lags in those areas. But he said the company is working to catch up, with a new product blitz planned in two weeks in New York (see related story, Cover 3). A big priority is its Java Virtual Machine program, which it will deliver by year's end.

"Our biggest challenge is to get the products out the door, and we're doing that at Networld/Interop this week with our Border Services. We won't turn everything around overnight, but we will begin to stabilize our financials when we release new products and enhancements," Marengi said. □



NETWORLD/INTEROP '97

Show-goers will find Gigabit galore

By Computerworld staff

FOR NEARLY A YEAR, Gigabit Ethernet networking has been making more than a passing reality. But network managers will get to check out real Gigabit Ethernet switches at Networld/Interop '97 this week in Las Vegas.

Vendors also will showcase high-speed access equipment for wide-area networks, network management tools and Internet wares.

"On the LAN front, it'll be Gigabit, Gigabit, Gigabit," said Skip MacAskill, a senior research analyst at Gartner Group, Inc. in Stamford, Conn. "It'll be the first time users will be able to see a variety of Gigabit Ethernet switches up close and personal, which should help them evaluate the technology."

GIGABIT ETHERNET

The maturing 1G bit/sec. networking technology was designed to add capacity to backbone networks and provide faster access to servers.

Foundry Networks, Inc. in Cupertino, Calif., will announce NetIron 16, a Gigabit Ethernet switch pair that routes 7 million packets/sec. The switches can support one or two Gigabit Ethernet ports, and cost \$1,995 and \$4,495, respectively.

Extreme Networks, Inc. will announce Summit1, an eight-port Gigabit Ethernet switch with a 77.5G bit/sec. switching core. The system can route at up to 12.5 million packets/sec. and comes with ExtremeWare, a software package that lets users manage network bandwidth via a browser. Summit1 costs \$24,995. The Cupertino, Calif., start-up also will announce Summit2, a switching system with two Gigabit Ethernet ports and 16 Fast Ethernet ports.

INTERNET

Netscape Communications Corp. in Mountain View, Calif., will reveal plans for a new version of its Directory Server, which will let users build global directories that span the Internet and extranets.

Directories let users look up names and contact information for users in an organization. Most companies maintain separate directories for many applications, such as electronic mail, groupware and databases. But Netscape's product can serve as a central directory for multiple applications that support the Lightweight Directory Access Protocol (LDAP). Directory Server 3.0, will be able to communicate with other LDAP directories across the Internet, intranets and extranets. If a user requests a listing not stored in a directory's database, the directory will refer the request to other directories and present the results to the user.

NET MANAGEMENT/MONITORING

Compware Corp. in Farmington Hills, Mich., will enhance its EcoScope. Similar

watchdog systems will debut from newcomers InfoVista Corp. in Redwood City, Calif., and Network Intelligence, Inc. in Palo Alto, Calif. Performance-analysis

products will now address service management needs. NetScout Systems, Inc. in Chelmsford, Mass., will announce the first traffic analyzer for T1 lines.

WANs

Cisco Systems, Inc. will announce a family of switching products that will save users money by funneling voice and data traffic from multiple LANs to one or two high-speed WAN links. The Cisco 3800 is available in three models. Prices range from \$3,395 to \$6,040. □



Budget Rent A Car sues software supplier

By Sharon Gaudin

BUDGET RENT A CAR CORP. claims that Genesys Software Systems, Inc. has taken it for a ride that cost the international auto rental company more than \$2 mil-

lion. Budget Rent A Car, in Lisle, Ill., is suing Methuen, Mass.-based Genesys, claiming that Genesys failed to get its business resources software up and running and that Genesys intentionally misled Budget about the software's scalability.

Budget officials said the company spent \$700,000 on the installation and maintenance of the system and \$60,000 per month for 30 months to outsource its human resources needs while the company was without a system.

In the petition filed with the U.S. District Court for the Northern District of Illinois, Budget contends that what was meant to be a multitier system could handle only one user at a time without freezing the whole system.

Budget also alleges that transaction requests frequently failed and that workstations repeatedly froze, keeping employees from accessing information on the system.

COUNTERSUIT

Genesys attorney Laurence Johnson countercharged that the problems lie with Budget's system and its lax information technology department. Genesys is countering Budget, looking for nearly \$300,000 in allegedly unpaid bills.

"Budget didn't do its homework," claimed Johnson, who is a partner at the Boston law firm Mahoney Hawkes & Goldings. "They didn't find out if their network had enough capacity to run their software at the speed and capacity they wanted. They didn't have a network adequate to run our applications along with everything else they were running on their network."

How to avoid software-buying pitfalls

1. Get a signed guarantee
2. Get specific details on what will be delivered
3. Get an acceptance clause
4. Have your risk analyzed
5. Find out what will happen to the contract if you decide to change something
6. Make sure your system can handle the implementation and maintenance

Source: The Standish Group International, Inc., South, Mass.

The head of Budget's IT department declined comment but said the company has since bought human resources software from Pleasanton, Calif.-based PeopleSoft, Inc.

Budget's lawyers didn't return numerous telephone calls.

"I've heard this story too times before," said Karen Boucher, director of The Standish Group International, Inc. in Dennis, Mass.

"You can find stories like this on PeopleSoft and SAP — on any of them, frankly. It's horrible that Budget spent all this money and time and never got a system up and running. But it happens," she said.

Judith Hurwitz, president of Newton, Mass.-based Hurwitz Group, Inc., said this case offers a good business lesson.

"Do your homework. If you're going to invest and implement complex software, figure out what the software and hardware requirements are. Talk to existing customers with a similar level of complexity," she said.

"If you plan well, that takes care of 90% of the problem and 90% of the surprises," Hurwitz said. □

1. BLURRED ELEPHANT SCREAMING ACROSS BONNEVILLE SALT FLATS.

ELEPHANT IN A CAGE MISSILE
ELEPHANT IN BOLLERBLADES NOT FACING A BULLET TRAIN

We wanted to tell you how our rapid access to large amounts of data maximizes your computing investment (without putting a majestic beast through the indignities of a photoshoot).

The fact is, MAXSTRAT Gen5 storage servers are scalable to over 800 gigabytes. That's ten times more capacity than other enclosures. Here's the fast part: a data transfer rate of 250 megabytes per second. Which is 15 times faster than competing storage products. > Gen5 is serious centralized storage. > When it comes to today's data-intensive applications, no other solution delivers better throughput and access for leading platforms including Sun, SGI/Conq, Fujitsu, NEC and IBM. Clearly, MAXSTRAT sets the new storage standard. > In some ways, we're like a storage investment protection policy. You see, thanks to MAXSTRAT's compatibility, the Gen5 only gets better if you change or add workstation or supercomputer suppliers. > What makes us the ideal solution? Maybe it's because storage is our ONLY business. We're the specialists. Which brings to mind a few visual possibilities like a...rah, we'll spare you. > To get the most out of your computing investment, call us at 408-383-1000.

Who needs visual cliché when you've got the world's fastest, most reliable, high capacity storage solutions?



MAXSTRAT

With an every minute of every hour of
every day help desk...



all-nighters are all over.

If you're living the life of the average IT professional, then you know it's a tough life. Because, after all, whatever goes wrong, guess who gets the call?

Maybe what you need is a better way of doing things, like partnering with us. That's right, MCI[®], the communications people. Because you'll be surprised at how well-known we're becoming in distributed data systems. In fact, MCI Systemhouse[™] is recognized by industry analysts as a leader in client/server computing. And *Data Communications* magazine just voted our end-to-end, 24/7 enterprise management service one of their "Hot Products" for 1997.

Our help desk program gives you the over-the-shoulder service that ensures your complete peace of mind. And the networks we can design, lease and monitor for you will work with all your legacy systems today, and just about anything you can imagine tomorrow. Isn't that the way computing was meant to be?

Check us out at www.mci.com or call 1-800-338-6815, and start getting some sleep at night.

Failed phone venture shows how not to build software

► Customer service system didn't deliver

By Emily Kay and Larry Marion

FOUR YEARS AGO, Time Warner Communications in Englewood, Colo., rolled the dice. It invested almost \$1 billion in advanced information systems and networks to break in to the local-area residential telephone business.

The gamble failed, partly be-

cause of intense competition, regulatory uncertainty and the company's own financial troubles. But performance lags in its \$30 million Customer Management System (CMS), which it is now trying to sell, hobbled Time Warner Cable for nine crucial months as it entered the Rochester market. The company still offers local access in the less-competitive business market.

When Time Warner Communications decided to enter the

Time Warner Communications had to build its own middleware to link applications with its Sybase, Inc. System to database. The firm also had to outsource code-writing work to lower-priced developers in Pakistan.

Today, numerous tools effectively link object-based applications and relational databases, but Time Warner Communications' homegrown software slowed response time. Terald Voorhees was until recently chief operating officer. He said the system's performance was "horrible."

The system was so slow employees were forced to write information such as customer names and the types of service being ordered and later type it into the system. Voorhees is no longer with the company.

HASTE MAKES WASTE

A mad rush to deploy the system deprived Fahim and his colleagues time to perform sufficient testing, Fahim said. He is currently executive director of network systems development at MCI Communications Corp. in Raleigh, N.C. "It was not the best system in the world, and we didn't do the best testing," he said. "But you do the best you can do in three months."

Shahid Abbasi, who recently resigned as Time Warner Communications' director of business systems development, says constant "tweaking" of the object-relational database management system link improved performance substantially.

A year ago, opening an account took up to eight seconds, storing data in the database took an additional 10 seconds and creating a new account took up to four seconds.

By this March, account loading and creation could be done

Pain by the numbers

When it announced its local telephone plans in 1993, Time Warner expected to sell its cable and telephone systems to an integrated package of product offerings supported by an advanced customer service system.

Time Warner Cable, which is a subsidiary of Time Warner media conglomerate Time Warner Inc., is the second-largest cable TV provider in the U.S., serving about 50% of U.S. households with TV.

During the past three years in subsidiary, Time Warner Communications, spent \$30 million to upgrade its cable network for telephone service in Rochester, N.Y., Washington, Colorado, Ohio, Austin, Texas, and elsewhere.

It also spent \$50 million on a national operations center in Englewood, Colo., for its information technology and network operations departments, according to company sources who declined to be identified.

Time Warner Communications

Some spent more than \$200 million to staff the local telephone offices, while revenues were less than \$50 million per year.

Time Warner Inc. has obtained under \$1 billion in debt from the merger of Warner Communications and Time Inc. It

also, the acquisition of Turner Broadcasting is expected to be used to pay off other problems during the past seven years.

To find relief, Time Warner Inc. has

down sold parts of its cable, film and other assets.

Time Warner Inc. currently is negotiating the sale of part of its cable TV subsidiary, including the Time Warner Communications unit, to US West Inc.

But what and Time Warner will have to spend another \$50 million to further upgrade and expand the central and state-wide cable network to support Time Warner's



cause of a bleeding-edge information technology strategy in which Time Warner spent \$30 million on a customer service system that couldn't deliver when it was needed most.

Now the company has canceled plans to expand its local residential telephone ventures and is trying to sell the expensive customer service system it developed to support those ventures. Time Warner Communications is the telephone division of Time Warner Cable in Stamford, Conn., the cable television subsidiary of New York-based media conglomerate Time Warner Inc.

MORAL OF THE STORY?

The lessons for IS organizations: Don't overspend on the IS infrastructure to support chancy new businesses; don't mix bleeding-edge technology and bleeding-edge businesses; and test, test, test before you inflict new systems on customers.

Other factors contributed to Time Warner Communications'

market, creating an easy-to-adapt customer service application such as CMS seemed the best way to offer less-expensive but better services and features than its competitors.

Mohammad Fahim, then Time Warner Communications' senior director of IS and services, decided in early 1994 to build a client/server infrastructure for the customer service system and to monitor its telephone network operations.

Fahim combined customer, account, product and network data in a data repository. Given the volatile nature of the telecommunications market, he selected an expert system to implement the business rules. The choice allowed Time Warner Communications to support constant rules changes, such as what type of data is acceptable in ordering and billing forms, without having to rewrite applications.

To cut development time, Fahim chose object-oriented development languages, even though

in less than a second. But in the meantime, other problems bedeviled Time Warner Communications.

Regulatory delays prevented it and other carriers from successfully entering local markets. Delays kept the cost of equipment higher than expected.

Then there was Time Warner's unfamiliarity with the phone business.

"Cable companies can't determine an accurate business model for the [telecommunications] business because the rules and prices for entry are uncertain," said Maxine Lery, a spokesperson at Electronic Data Systems Corp.'s communications industry group.

Interference and other techni-

cal problems in converting a one-way broadcast medium into a two-way information superhighway requires more fibers and additional hardware, along with additional switches to expand the network to 36 metropolitan areas from the 18 currently equipped. And the new owner will be forced to advance at least \$400 million in operating expenses before break-even is expected in 2001.

Under the best-case scenario, it would take Time Warner almost a decade (1994 through 2003) to recoup its investment in Time Warner Communications' local telephone bid.

The local telephone business company would need to generate more than \$20 billion in revenue to generate enough profit to amortize the costs of building and operating its telephone network and the associated IT infrastructure.

In the end, Voorhees said, the lesson is that "Trailblazers make mistakes. The idea that we could be a service company as well as a software development house was not working for us."

Emily Kay is a senior editor and Larry Marion is editor in chief at Triangle Publishing Systems Co., a Newton, Mass., publisher.



Mohammad Fahim, former senior director of IS at Time Warner Communications, says, "[CMS] was not the best system in the world, and we didn't do the best testing."

ASSESS, ANALYZE, AND IMPLEMENT
FOR THE YEAR 2000.
(AND WHILE YOU'RE AT IT,
WATCH OUT FOR THE BULL.)



**Meet your Century Date Change problem
head-on with Micro Focus Revolve/2000**

A lot of software vendors are charging into the market with Year 2000 "solutions," but look closely—you'll find many are proprietary, incomplete, or make claims you know are too good to be true. With our experience, we know better. Micro Focus Revolve/2000, gives you tangible, comprehensive technology in a

single package that lowers your risk and addresses every step in the process.

First, Revolve/2000's Assessment and Analysis facilities help you quickly identify date occurrences in your applications and automatically locate the source code that needs modification. You'll see precisely which parts need to be changed and get an estimate of the cost and effort required to do it. That way, you'll be in a better position to decide what internal or external resources are needed to get the job done.

Next, its Implementation facilities let you either automatically convert two-digit date fields to four-digit fields or efficiently make source code modifications with its integrated editor.

Then use Revolve/2000's built-in syntax checker to find errors and help ensure clean compiles before testing, either on the mainframe or, more cost-effectively, on a PC with other Micro Focus application development tools.

Nobody else offers anything like Revolve/2000. That's because we're the 20-year leader in tools and services for developing and maintaining legacy systems. We know how to help you avoid stepping in someone else's mistakes.

See For Yourself. Call Micro Focus and order your Revolve/2000 demo disk today. You'll see why it's the only solution you need. Dial 1-800-632-6266 or visit us at <http://www.microfocus.com>.



Revolve/2000 can work with other Micro Focus tools to provide seamless access to host files from the PC.



Transforming Enterprise Systems **MICRO FOCUS®**

Free virus screening offered to Web surfers

By Sharon Machlis

YOU DON'T NEED to install antivirus software to scan for viruses anymore.

Starting today, World Wide Web surfers can get a free "virus checkup" over the Internet by connecting to housecall.antivirus.com. An ActiveX component will download to the user's machine to look over a floppy disk, hard drive and even scan network connections for common viruses and remove them.

Operated by Trend Micro, Inc., the new site is mostly a "gee-whiz" demonstration for now. But by autumn, the Cupertino, Calif., company hopes to use similar techniques over corporate intranets to screen systems for viruses.

Administrators might schedule PCs on the network to log in at certain times for screenings and updates, and the software could generate enterprise-wide reports about problems found and fixed, according to Eva Chen, Trend's president.

Trend already offers server-based virus screening for in-house corporate networks. Intranet delivery "seems like a very logical step," said Michael Goddard, assistant vice president of information security at PNC Bank NA in Pittsburgh.

"It's a very neat idea. I am definitely going to be interested to see how it matures," said beta-tester Dave Baiman of Winlog, NT network systems administrator at Cellular One Washington/Baltimore, Inc.

The attraction of ActiveX-based software is that one version can run on multiple operating

systems, including Windows 3.1 and Windows 95. The ActiveX component architecture is an extension of Microsoft Corp.'s OLE designed for applications over a network.

ActiveX security has been criticized for allowing code to be essentially run rampant through a PC once a user decides the software comes from a "trusted" source. In contrast, Java, the component architecture from Sun Microsystems, Inc., runs under stricter controls.

SIMILAR SITUATION

Although some might be uneasy about having an ActiveX control rifling through a hard drive, the situation isn't that different from installing software from a floppy disk. In either case, users must trust that the program does what it claims to do and nothing else, according to Gary McGraw, a research scientist at Reliable Software Technologies Corp. in Sterling, Va., and co-author of *Java Security: Hostile Applets, Holes & Antidotes*. "The question is, would you trust any person from Trend Micro to use your computer during lunch and do anything they wanted?" McGraw said.

Users must also trust that Trend—or any company—can keep the site secure from hackers and safeguard the encryption key used to "sign" ActiveX code and ensure that the applets are from a trusted source. "If anybody could steal your private key," McGraw said, "the whole system breaks down."

More vendors offer virus scanning via networks.
Page 59

Users view Oracle8 with caution

► Adopt wait-and-see attitude, as database nears shipment date

By Craig Stedman
DALLAS

THE LONG-PROMISED Oracle8 finally got a full public airing when Oracle Corp.'s database user group gathered here last week. The reaction from most users: Sounds good, but let's not rush into anything.

Eight attendees at the annual conference, sponsored by the International Oracle User Group-Americas, said they have barely started thinking about migrating to Oracle8. The new database is expected to be formally introduced next month.

Many of those users said they want to see other companies go first. Some still haven't upgraded to the latest version of Oracle7, and will likely go there before moving to Oracle8. Others said they must make sure their application software gets certified for Oracle8 before they make plans.

"I want to start playing with Oracle8," said Joseph Maloney, manager of relational database systems at National Processing Co., a financial transaction clearinghouse in Louisville, Ky. But the company's applications group has to come up with a compelling business reason to switch to the new database, he added.

NOT SO FAST

News about many of the transaction processing and administration features, which were unveiled in a series of sessions and speeches on Oracle8, had already dribbled out. But Oracle officials finally broke their silence about the object technol-

ORACLE'S OBJECTS

Object Technology features in Oracle8

- 1 The ability to model business functions as objects
- 2 The ability to synthesize objects from existing relational data
- 3 Pointers for navigating among different objects
- 4 Expanded support for storing multimedia types of data
- 5 Support for writing Java-based stored procedures and triggers

* See increased scope of Oracle8

ogy being built in to the database. As expected, object support will go only so far at first.

Ken Jacobs, vice president of product strategy at Oracle in Redwood Shores, Calif., confirmed earlier reports that the database will let users define business processes as objects.

For example, purchase order could be directly invoked by end users instead of having to be created on the fly by joining different pieces of relational data (CW Feb. 24).

Oracle8 will include several other object features (see chart). But missing at first will be support for capabilities such as inheritance and polymorphism, which enable objects to be tailored for different users. Oracle officials didn't specify when those will be added. Also, Java support isn't due until a second release.

That prompted some users at the conference to describe Oracle8 only as a good first step into object territory.

"It has the rudimentary beginnings of the capabilities you need to create objects, but that's as far as it stands right now," said Bob Navarro, an Oracle consultant at The Boeing Co.'s information support services unit in Bellevue, Wash. Navarro is beta-testing Oracle8 for possible use in applications such as modeling jet fighter planes.

But for other users, Oracle's gradual move toward objects isn't necessarily a drawback.

Object technology should make it easier to change applications as business needs evolve, said Thomas Henkel, database team leader at Johnson Controls, Inc. in Milwaukee. "But we have such a large investment in relational applications that to just switch over to objects wouldn't be feasible," he added. □

Upgrade maze

Oracle promises that applications written for its Oracle7 database will move seamlessly to Oracle8. But users at the all-in Oracle conference that doesn't mean upgrades will be easy.

For example, Johnson Controls in Milwaukee runs applications on multiple versions of Oracle7. Upgrading them all to Oracle8 combinations that doesn't mean upgrades will be easy.

"We're still trying to get an idea of how big the beast is that we're going to be wrestling with and what it's going to mean to our enterprise," Henkel said.

Some users may not find that Oracle8 won't run on their current hardware/operating system combinations.

"Oracle plans to support Oracle8 on virtually all the platforms that matter," said Ken Jacobs, vice president of product strategy at Oracle.

But for less strategic or older systems, porting decisions will be made "on a platform-by-platform basis," he added.

An Oracle user at a large telephone company said he is worried that the version of IBM's AIX operating system his company uses won't make the Oracle8 cut. Despite Oracle's reassurances about easy migrations, "you still have all the upgrade issues that are always there," said the user, who requested anonymity.

—Craig Stedman

Voice-over-frame-relay spec awaits OK

THE FRAME RELAY FORUM today is expected to approve a long-awaited standard for voice over frame relay at Network/Interop '97.

A product specification is needed to make sure frame-relay equipment used at different corporate sites can interoperate. In the age of mergers, this is particularly crucial if you are a company that uses different equipment want to share the network.

Some small to medium-size

companies are already using voice over frame relay to cut internal telephone bills, but larger corporate users have been more reluctant to adopt the technology.

Jay Benitez, manager of wide-area networking at Pacific Cre Health Systems in Cypress, Calif., said voice-over-frame-relay equipment currently would be too difficult to install at roughly 50 sites.

Benitez's health maintenance organization, a Cisco Systems,

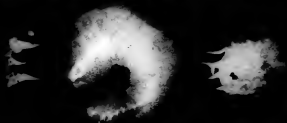
Inc. shop that uses a multi-megabit frame-relay network, was recently acquired by Pacific Cre, a JCom Corp. shop. The acquisition is posing many interoperability challenges, Benitez said.

"I think voice over frame is OK for internal communications, but a lot of our network supports customers as well, and we'd have to figure out a way to differentiate between the two," Benitez said.

—Kim Girard

A new data warehouse performance standard has been set by Informix. We increased query speeds by 70%* in our most recent TPC/D benchmark. Our 3416 Qppd represents an exponential leap in performance. That means faster access to the information your business needs to keep its competitive edge. ● But the news isn't simply query speed. The Informix load time is half that of Oracle, so you can integrate the information you need as it becomes available. And look at the price/performance figures. You could

We laid the old benchmark to rest



as gently as our technology would allow.

save millions on installation. ● Power, speed, and economy like this come from DSA, our core parallel architecture. When you build on the right foundation, you start out ahead. ● So Rest in Peace, old benchmark. You didn't do all that much for data warehousing, but you did give us something to shoot at. www.informix.com

INFORMIX®
Unleashing Business Innovation™

Data Warehouse Performance Comparison

Product	Power (Qppd)	Load Time	Number of Processors	Price/Performance
INFORMIX-OnLine XPS	3416.4	7 hrs. 47 min.	48	\$3,007
Oracle 7	2009.5 (70% slower)	15 hrs. 9 min.	64	\$3,312
Teradata	1501.1 (125% slower)	14 hrs. 36 min.	160	\$9,374

*Based on Qppd@3000 on 4/7/97. Qppd@3000 advantage is 20%. Benchmark configurations: INFORMIX-OnLine Extended Parallel Server 48 DB UAT was run on HP E7512 at 3,416.4 Qppd@3000, 1,877.7 Qppd@3000 and \$3,007/Qppd@3000 on 4/7/97 (availability date 10/1/97). Oracle 7.3.2 was run on Sun Ultra Enterprise 8800 at 2,009.5 Qppd@3000, 1,341.9 Qppd@3000 and \$3,312/Qppd@3000 on 3/21/97 (availability date 8/1/97). NCR Teradata 7200 R was run on NCR 1100R 30 Node System with 1,501.1 Qppd@3000, 1,800.3 Qppd@3000 and \$9,374/Qppd@3000 on 8/6/96 (availability date 10/1/96).

Suite offer for SAP R/3 users

► CA integrates SAP management tools with Unicenter

By Patrick Dryden

SEEKING to simplify the maintenance of SAP AG's R/3 applications, Computer Associates International, Inc. has integrated SAP tools with its enterprise management suite.

That means the central information technology staff could manage far-flung R/3 servers and processes in concert with the network and other systems and applications — all through CA's Unicenter TNG (The Next Generation).

The integration found in, Unicenter TNG for SAP R/3 can lower management costs and improve service by making fewer operators more efficient.

Unicenter TNG provides one point of view for managing multiple tasks, without requiring the IT staff to make different tools work together, said Tony Navarro, manager of systems management at Allegiance Healthcare Corp. in McGaw, Ill.

The integrated suite can control multi-

ple suite can turn to products such as Patrol from BMC Software, Inc. in Houston and Action from OpenVision Technologies, Inc. in Pleasanton, Calif.

But some may shy away from adopting

Unicenter TNG for SAP R/3 because of CA's reputation for bungling support and pressuring users. CA officials in Islandia, N.Y., said they recognize those concerns and are trying to rectify them.

For example, current Unicenter user

Mitsubishi Consumer Electronics America may abandon the suite because of uncorrected problems and handles over support, said Jeff Leggett, network services manager at Mitsubishi in Norcross, Ga.

Unicenter TNG for SAP R/3 manages Windows NT and a few Unix platforms for R/3 applications. It requires SAP Release R/3 3.0C or greater and is available now. It is priced by configuration. □

Minimal configuration cost
and no on-site installation
for your management tools
to every local implementation.

ple R/3 implementations for departments or regions. It can schedule R/3 functions and routine jobs such as back-up. It also can correlate events that occur to speed troubleshooting and response.

The goal, Navarro said, is to manage a more complex environment with the existing staff.

STRENGTH IN NUMBERS

The CA/SAP integration can really pay off for large organizations with multiple R/3 implementations, said Jonathan Eunice, an analyst at Illuminata, Inc. in Nashua, N.H. "Global corporations don't want to hire an administrator and a whole management crew for every local implementation," Eunice said.

Unicenter just got more attractive, he said, not just for its centralized R/3 support, but for R/3's integration with the rest of the suite's capabilities.

Rival Tivoli Systems, Inc. in Austin, Texas, also can handle R/3 tasks along with other functions through its TME 10 enterprise management platform.

But Tivoli's approach requires SAP-specific integration modules for separate tools that plug in to the TME 10 framework, according to Eunice. Few such management tools are available that can extend through TME 10 to R/3 applications, he said, and they are less capable than the functions built in to Unicenter TNG.

Users who prefer not to adopt an en-

I NEED THE DATA NOW!

YOU NEED ENCORE DATASHARE™ TODAY.

You hear it every day. I need the Data. I need it NOW.

You need data from mainframe storage. You need data from open systems storage. You don't have time to wait. That's a problem.

You don't want to hear about copy time, conversion time, network traffic or tape speeds. You just want the data. And you want it where you need it. Not after the batch window. Not after a copy is made. Not after it's moved. NOW.

That's why you need Encore's Universal Storage Processor with DataShare™. There's no data transport,

no copies made, no tapes to mount and no network delays. Just information now. One common storage medium makes your data directly accessible by all attached platforms — mainframes, open systems and network servers — all sharing the data as soon as it's written. Encore DataShare — one shared copy of the data, where you need it, when you need it.

Don't wait for the data. DataShare is available now.

Call Encore at 1-800-833-6267.

ENCORE
COMPUTER CORPORATION
www.encore.com

Data
Data On Demand

Unicent Is The Smart Manage An

After years of struggling to manage distributed networks, network managers are replacing their hodgepodge of various tools and piecemeal solutions with a single, integrated network management solution.

One that can manage the entire enterprise and all your networks, including TCP/IP, DECnet, IPX/SPX and SNA.

Only Unicenter TNG Offers End-To-End Management.

Unicenter® TNG™ offers automatic, intelligent, object-oriented network management that enables you to manage proactively. So you can anticipate and solve problems before they happen.

Unicenter TNG gives you a single point



of control for your complex and heterogeneous global network. Its dynamic auto-discovery ensures that your network configuration is current. The Real World Interface™ allows for

better visualization of your network. And third-party tools such as element managers integrate with Unicenter TNG through its open and extensible architecture.

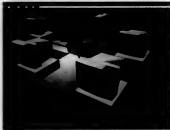


er TNG test Way To y Network.

Join Us At
CA-World '97
July 13-18
CALL 1-800-CA INFO97

Unicenter TNG Is The Industry Standard For Enterprise Management.

Unicenter TNG is an integrated solution for end-to-end enterprise management. With support for every major hardware platform and operating system, Unicenter TNG is open, scalable, extensible and always vendor-neutral.



The Real World Interface uses virtual reality to create a 3-D environment that represents objects just as they appear in the real world.

The Best Feature Of All: Unicenter TNG Is Shipping Today.

Enterprise Functionality

- ▲ Security Management
- ▲ Network Management
- ▲ Event/Status/Exception Management
- ▲ Database Management
- ▲ Software Delivery
- ▲ Auto-Discovery
- ▲ Workload Management
- ▲ Storage Management
- ▲ Performance and Accounting
- ▲ Output Management
- ▲ Service/Help Desk
- ▲ Change and Configuration Management
- ▲ Inventory and Asset Management
- ▲ Application Management
- ▲ User-Built Agents
- ▲ Virus Protection

Unicenter is a proven software solution that's available today. It's real, mission-

**SHIPPING
TODAY**

critical and up and running in thousands of sites around the world for some of the smartest users in the world. Users who know that working smarter always beats working harder.



For More Information Call
1-800-864-2368
Or Visit www.cal.com

**COMPUTER[®]
ASSOCIATES**
Software superior by design.

Unicenter[®] TNG[™]

©1997 Computer Associates International, Inc., Yonkers, NY 11789-7000. All other product names referenced herein are trademarks of their respective companies.

Social Security site shutdown sparks debate

► Putting personal data online poses problems

By Sharon Machlis

MOST CORPORATE chief information officers don't have to worry about Congress criticizing their Web sites.

But in one way or another, any organization that holds sensitive data has to face the issues that recently prompted lawmakers to urge a shutdown of a Social Security Administration (SSA)

World Wide Web service.

How do you keep data from falling into the wrong hands? And is the public ready to accept having such data online at all?

"People are trying to find the comfort zone," said Scott Campbell, vice president and associate general counsel at

Charles Schwab & Co.'s electronic brokerage in San Francisco.

An SSA Web service that provided personalized earnings and benefits records to American taxpayers over the Internet—as it had been doing for years via regular mail—sparked controversy that stopped could easily access someone else's records.

The service required a person's name, address, Social Security number, mother's maiden name and place of birth. The service was suspended while the agency, at congressional request, holds a series of public hearings beginning today with computer security and privacy experts, as well as consumers.

"I think we had to get to this point eventually," said Renny DiPentima, a former deputy commissioner for systems at SSA and now vice president and CIO at SRA International, Inc., a software firm in Arlington, Va. "It gets to a very specific problem government is wrestling with.... What is the proper balance of security and access? This is going to be an excellent policy debate."

Imagine getting crucial information to everyone—viewable from every perspective—at any level of detail. Without paying for miracles, Arbor® Easbase™ is the powerful OLAP server that lets you deploy an entire multidimensional reporting and analysis solution.

your data warehouse. In days, not months.

Now you can create a server-based system that is easy to define and maintain. So your customers can choose the information they need—using the tools they already know. Spreadsheets, browsers, report writers, desktop and Web tools—you name

it. Stay ahead of your customers' growing need for information.

CALL ARBOR SOFTWARE TODAY AND ARRANGE FOR YOUR FREE WORKSHOP.

In just three days, you'll have a working model up and running. Your site. Your data. Your business rules. Guaranteed.

CREATE A COMPLETE
INFORMATION DELIVERY SOLUTION
FOR YOUR DATA WAREHOUSE

ON THE SEVENTH DAY, REST



**ARBOR
SOFTWARE**

Driving Business Performance



Call for your free
Ratings Report

ARBOR SOFTWARE • 800-858-1666 EXT. 6080 • WEB SITE: WWW.ARBORSOFT.COM/CWORLD

©Copyright 1997 Arbor and Easbase are registered trademarks of Arbor Software Corporation, 1144 Commerce Ave., San Diego, CA 92108, 408-544-6500 ext. 6080. Photo Credit: Salsola/Bettmann, NY; Michelangelo/Bettmann. The Creation of Adam detail of the hands of God and Adam, Sistine Chapel, Vatican Palace, Vatican, Rome.

Password techniques for Web sites

- ◆ Require passwords that are created off-line
- ◆ Use digital certificates that authenticate users
- ◆ Require one-time passwords generated by software, cards or other devices

Currently, banks and brokerages almost always demand passwords before their online customers can access their accounts. A password wasn't needed on the SSA site.

Schwab also restricts online trading activity. Customers can buy and sell securities, but they can't request that money be sent to an outside bank account.

Major credit agencies don't allow consumers to receive copies of their credit reports online, although people can request data on the Web and receive paper copies by mail.

But First American, Credco in Carlsbad, Calif., is finishing up plans to sell consumers their own credit reports online. The service is expected to launch in the fall.

The company expects to require a person's name, Social Security number, address, previous address and two credit-card numbers in order to make an online request, said Steve Casey, manager of data center operations.

An online request would be checked with a credit bureau for fraud problems and credit-card companies to see if a card was reported stolen. First American Credco also expects to use digital certificates, which employ encrypted verification by a third party, to authenticate a user.

The electronic reports won't contain Social Security numbers and will truncate credit-card numbers to prevent hackers from seeing the data. □

Network software that's well-designed, well-implemented and well-reviewed.

**"Best enterprise management
software of 1996."**

*- Infoworld praises Solstice™ Enterprise Manager™ software**

**"Solaris is a highly scalable, powerful and flexible
OS well suited to general Internet
service and enterprisewide intranet services."**

- Network Computing™ raves about Sun™ Solaris™ operating environment†

**"Many new Java™ development tools were released
this year, but none as radical as Sun's Java™ Workshop.™"**

*- PC Magazine honors Java Workshop Software**

And there's a whole lot more where that came from.
To see for yourself, visit our website or give us a call.

Develop, deploy and manage with Sun™ Workshop,™ Solaris, and Solstice™ Software.

www.sun.com/sunspft/reviews/ or contact 1-800-SUNSOFT (786-7638)



THE NETWORK IS THE COMPUTER

*January 27, 1997; February 1, 1997. Reprinted from PC Magazine (December 17, 1996). Copyright © 1996 by PC Publishing Company, Inc. All rights reserved. Sun, Sun Microsystems, the Sun logo, Solstice Enterprise Manager, Solstice, Sun Workshop, Solstice, Java, Java Workshop and The Network Is The Computer are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries.



In business, the lone wolf is a vanishing species. No single company has all the answers.

Which is why DIGITAL offers you not merely the world's fastest 64-bit servers.

But one of the most formidable arrays of allies and partners in all of



computerdom. DIGITAL and Microsoft® have allied to bring Windows NT® and BackOffice™

solutions to your entire enterprise. DIGITAL and Oracle® offer record-shattering performance,

transforming databases and busi-

Not only are business applications into potent

DIGITAL AlphaServer systems powerful.

competitive weaponry. Computer Associates™ teams with DIGITAL to deliver unparalleled

expertise in mission-critical

They also have enterprise management solutions.

powerful friends.

Together, SAP™ and DIGITAL offer business application solutions, for a better return on your

information. Then again, your solution might be a fully integrated computer/telecommunications

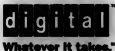
system from MCI® and DIGITAL. Or Internet and intranet technology from Netscape™ Communi-

cations and DIGITAL. Or Web-enabled enterprise applications from Lotus® and DIGITAL. In fact,

DIGITAL has thousands of partnerships, with one singular result. AlphaServer™ systems promise not

just raw performance. But a practical, powerful business edge. Call 1-800-DIGITAL, ext. 266. See

us at www.ads.digital.com/friends. Begin to make our partners—and the DIGITAL edge—your own.



Tool cuts cost of PC video

By Matt Hamblen

NEW DESKTOP video publishing software could cut the cost of producing video for World Wide Web sites or business presentations, analysts said.

MGI Software Corp. in Richmond Hill,

Ontario, recently announced MGI VideoWave for Windows 95. The software will be bundled with several PC lines being announced this week that will use Intel Corp.'s new Pentium II processor (see related story, page 2).

VideoWave sells separately for \$99. It

can be used to combine video clips, audio, still images and graphics into full-motion video productions.

"We suddenly see we can do things on the desktop that weren't all that easy before," said Maarten Heilbron, a television producer at How To Productions in

Toronto. He has been testing VideoWave since January.

One feature unique to VideoWave is a graphical story line on the user interface that Heilbron said makes it "much easier to rearrange clips" than professional video editing systems that can cost thousands of dollars.

"It takes out scrolling through minutes of video to find what you want," Heilbron said. "That's a big time-saver and makes it easier to see what you've got."

Competing products include Premiere from Adobe Systems, Inc. in San Jose, Calif., which costs about \$1,000, and Premiere from Corel Corp. in Ottawa, priced at \$99. Neither has a graphical story line feature.

"VideoWave should scare the holy bejezus" out of Silicon Graphics, Inc. (SGI) in Mountain View, Calif., said analyst Rob Enderle at Giga Information Group in San Jose.

SGI makes a low-end workstation priced at more than \$7,000 that can provide professional-quality video publishing, but Enderle said many users in low-end production don't require something that expensive.

"It takes out scrolling through minutes of video to find what you want. That's a big time-saver."

**-Maarten Heilbron,
How To Productions**

An SGI spokeswoman wouldn't comment on VideoWave or other competitors, but she said SGI offers WebForce for creating and providing streaming video at the low end of the market for about \$2,000. SGI doesn't make Windows-enabled PC video software.

"VideoWave gives you a set of tools for creating a professional presentation without the budget of going to a major vendor," Enderle said. A user could purchase a Pentium II machine with VideoWave for \$3,500 to \$4,500 and still use the PC for tasks other than video production.

Enderle and other analysts said VideoWave's ease of use will make it attractive to general consumers and training and marketing departments in smelting of fices of big companies. "There's huge interest in doing video editing on PCs," Enderle said. □

PERFORMANCE^{is} EVERYTHING[™] for data warehouse success

RED BRICK® WAREHOUSE 5.0 IS THE WORLD'S
fastest and most ***scalable*** relational database
for data warehousing, including data marts, OLAP and data mining.

The "Universal, generic,

Register now for the
"Performance is Everything"
seminar in your area.

the only RDBMS
designed for data warehousing.

facts and service enable more
more data and more

With Red Brick, you get a data warehouse
solution that performs ten times faster for half
the cost, deployed in one-third the time.

To learn more, attend the "Performance is Everything" seminar in your area. Register
now: 1 800 939 1845 or www.redbrick.com.



RED BRICK®
The Data Warehouse Company™

Red Brick Systems, Inc. 485 Alberto Way, Los Gatos, CA 95032 USA www.redbrick.com

© 1997 Red Brick Systems, Inc. All rights reserved. All trademarks and registered trademarks are property of their respective holders.

**Win a Cool Prize
Every Week!**

Enter the Techtoys
Sweepstakes in
Computerworld
Marketplace

Excluding IT Connect

Compuware QACenter does what?!?

Compuware's QACenter is a leading provider of
market-leading products -- File-AID, Abend-AID,
XPEDITER and PLAYBACK.

And last, but not least. You get testing services
professionals who can assist you in QA planning, training,
and implementation. What a concept, eh?

Gosh, what will the competition do now?

For Compuware's Testing Process Guide, visit our web
site.

QACenter



COMPUWARE.

1-888-531-5106

www.compuware.com/qacenter
automated_testing@compuware.com

All product names are trademarks of Compuware Corporation.



First server sold

© 1999 Dell Computer Corporation



#1 in servers



One million servers sold

Gen X looks for fun

CONTINUED FROM COVER

skills market they can afford to be quite picky.

"For 15 it's a seller's market and when you're in a seller's market you get to be choosy," said Mike Overholt, a corporate culture consultant at Riverton Management Consulting Group in Palmira, N.J.

So companies are offering Generation Xers everything from customized working hours to whitewater rafting trips and virtual reality games. Such benefits do more than attract new, bright talent. They also help to foster team spirit and prevent job burnout which is critical to getting projects done on time and within budget.

Pete Fazio 25, turned down better-paying jobs before going to work as a World Wide Web site designer at a Rochester, N.Y.-based advertising firm. What sold him was the pinball machine in the firm's lobby and the overall fun atmosphere.

"It really doesn't even feel like it's a job most of the time," Fazio said. "You're sort of hanging out and playing with computers, but you're doing all your work. All my friends are here, and I'm here all the time from eight in the morning until eight at night."

Even old-line companies such as 120-year-old U.S. Fidelity and Guaranty Co. (USF&G), are changing with the times.

The Baltimore-based insurance company recently spent millions to transform the culture of its 600-person information systems organization.

The overhaul began with a \$12 million renovation of the group's office. It was redesigned 24 times before Chief Information Officer Thomas J. Lewis got what he wanted: the look and feel of a top-notch software engineering factory.

Open spaces for collaboration have replaced the warrens of cubicles. And no manager's office has more than three walls — a big change for a company where seniority had dictated the size and shape of each office.

ALL TANGLED UP

Non-stall meetings may feature Lewis telling stories, playing the harmonica or wearing a 17-foot, 100-pound Business pitchman around his neck.

USF&G turned the traditional 15 department into a collection of virtual teams: staffers take on new and different responsibilities with each project. And USF&G has upgraded its technology to an Internet-based development environment.

"Everything we do is object-based or Internet-based, and we are probably the hottest site in the Baltimore/Washington area for technology," Lewis said.

"People know they have to



perform, and we allow them to have fun. But you can't encourage people to come unless you're committed to new technology.

The payoff for USF&G is a six-fold increase in the 15 department's project output and a productivity gain of 60% since the overhaul. And the company's 15 turnover rate of 11.8% is relatively low for 15 departments.

At Cambridge Technology Partners, a systems integration firm in Cambridge, Mass., it isn't unusual for staffers to work 70- and 80-hour weeks. But pumpkin carving contests, scavenger hunts, rooftop ping-pong games, go-cart racing and parking lot hockey games can make those long hours bearable.

Peter Kim, a 23-year-old software developer at the firm's San Mateo, Calif. office, recalled one field trip to a virtual reality flight simulator. "We spent an hour flying around in this simulated fighter craft shooting each other down," he said.

"None of these activities took a long time, but they showed us that the project manager was looking out for us," Kim added.

EMPLOYEE LOYALTY

Increased productivity is behind all the fun and games.

"The more fun they're having, the more employees are willing to go the extra mile," said Sarah Westcott, 26, a Cambridge Technology Partners project manager. "We really don't spend all that much money to do all this, but the return becomes very, very evident."

At Federal Express Corp. in

GREAT PERKS

Software development: 10 to 15% increase in productivity
Hardware development: 10 to 15% increase in productivity

Pinball machines

Go-cart racing

Scavenger hunts

Name your own working hours

Whitewater rafting trips

Virtual reality outings

Parking lot hockey games

Open offices for teamwork

Memphis, managers go out of their way to protect a casual and fun atmosphere at candidates' very first interview.

"When we have new recruits come in, we try not to show up in our business suits and appear all stuffy," said Paul Vancey, managing director of development services at FedEx. "We need to think it was important for us to present a very formal, professional front. But now when we have [recruits] in and

consultant in Dallas.

They're also the MTV generation, so they think in very rapid-fire time. They're used to multitasking as a way of life, so you need to provide lots of opportunity," he said.

The quest for more opportunity is why Pullen, for example, changed jobs again within the past six months. He took a pay cut and left what he described as a developer's dream job at Millennium Corp. in Rochester, N.Y., to take an even more challenging job working on data mining and fraud-detection systems at Chicago-based Magnify Corp.

Where I worked [before] was cool software development, working in exciting, high-end projects. But one more component was missing. I wanted to be pushing the edge of technology and doing something really extraordinary. So I took a risk to come out here," he said.

Employers can hold on to Generation Xers a little longer if they provide the fun and geeky culture these young people want. But the trend is still toward multiple jobs for shorter periods of time — regardless of money, technology, ego or culture.

Right now, Kim said he isn't thinking about leaving his job. "But Silicon Valley is so fast-paced. Opportunities pop up all the time," he said. "I didn't come in with the intent of moving on, but that doesn't mean I wouldn't be open to it." □

Mixing up the generations

Some older software developers and project managers may think they have nothing to gain from listening to a newly hired college graduate. But veterans with that attitude have no place at Sapient Corp. in Cambridge, Mass.

One of the cardinal rules at the fast-growing, team-oriented systems integration firm is that everyone has something to contribute. And everyone learns from everyone else.

"If you've got a problem listening to a 22- or 23-year-old, you'd have a real problem here," said Courtney Dickinson, a former elementary school teacher who heads up Sapient's corporate culture programs. "If you just want to do cool stuff with technology on your own, you're not going to fit in here," she added.

Experts say generational issues are bound to crop up between baby boomers and Generation Xers in today's team-oriented, work hard/play hard corporate cultures.

"Both groups value freedom and a lot of free time and flexibility," said Randy Pennington, a corporate culture expert.

"But the baby boomers grew up under people who said you have to earn the right to those [benefits], Generation X is just assuming that's what they're due," he said. "It can cause frustration."

Sapient, for one, tries to head off problems by reinforcing team-oriented values during its five-day cultural boot camp, which emphasizes communication and openness.

Other companies would do well to follow suit. Pennington said the best and brightest young 15 professionals will gravitate toward companies with an egalitarian environment, rather than to "a place where you don't speak until spoken to." — Julie King

"They're also the MTV generation. . . . They're used to multitasking as a way of life, so you need to provide lots of opportunity."
— Randy Pennington,
business-culture consultant

Gen X looks for fun

CONTINUED FROM COVER 1

skills market, they can afford to be quite picky.

"For IS, it's a seller's market, and when you're in a seller's market you get to be choosy," said Miles Overholt, a corporate culture consultant at Riverton Management Consulting Group in Palmyra, N.J.

So companies are offering Generation X-ers everything from customized working trips to whitewater rafting trips and virtual-reality outings. Such benefits do more than attract new, bright talent. They also help to foster team spirit and prevent job burnout, which is critical to getting projects done on time and within budget.

Pete Fazio, 25, turned down better-paying jobs before going to work as a World Wide Web site designer at a Rochester, N.Y.-based advertising firm. What sold him was the pinball machine in the firm's lobby and the overall fun atmosphere.

"It really doesn't even feel like it's a job most of the time," Fazio said. "You're sort of hanging out and playing with each project, but you're doing all your work. All my friends are here, and I'm here all the time from eight in the morning until eight or nine at night."

Even old-line companies, such as 100-year-old U.S. Fidelity and Guaranty Co. (USF&G), are changing with the times.

The Baltimore-based insurance company recently spent millions to transform the culture of its 600-person information systems organization.

The overhaul began with a \$3.4 million renovation of the group's office. It was redesigned 34 times before Chief Information Officer Thomas I. Lewis said he wanted the look and feel of a top-notch software engineering factory.

Open spaces for collaboration have replaced the warrens of cubicles. And no manager's office has more than three walls—a big change for a company where seniority had dictated the size and shape of each office.

ALL TANGLED UP

Now, staff meetings may feature Lewis telling stories, playing the harmonica or wearing a 17-foot, 100-pound Burmese python around his neck.

USF&G turned the traditional IS department into a collection of virtual teams: staffers take on new and different responsibilities with each project. And USF&G has upgraded its technology to an object-based development environment.

"Everything we do is object-based or Internet-based, and we are probably the hottest site in the Baltimore/Washington area for technology," Lewis said.

"People know they have to

perform, and we allow them to have fun. But you can't convince people to come unless you're committed to new technology."

The payoff for USF&G: a sixfold increase in the IS department's project output and a productivity jump of 60% since the overhaul. And the company's IS turnover rate of 11.4% is relatively low for IS departments.

At Cambridge Technology Partners, a systems integration firm in Cambridge, Mass., it isn't unusual for staffers to work 70- and 80-hour weeks. But pumpkin-carving contests, scavenger hunts, rooftop egg-toss games, go-cart racing and parking lot hockey games can make those long hours bearable.

Peter Kim, a 23-year-old software developer at the firm's San Mateo, Calif., office, recalled one field trip to a virtual-reality flight simulator. "We spent an hour flying around in this simulated fighter craft shooting each other down," he said.

"None of these activities took a long time, but they showed us that the project manager was looking out for us," Kim added.

EMPLOYEE LOYALTY

Increased productivity is behind all the fun and games.

"The more fun they're having, the more employees are willing to go the extra mile," said Sarah Westcott, 26, a Cambridge Technology Partners project manager. "It's really don't spend all that much money to do all this, but the returns become very, very evident."

At Federal Express Corp. in

Memphis, managers go out of their way to project a causal and fun atmosphere at candidates' very first interview.

"When we have new recruits come in, we try not to show up in our business suits and appear all stuffy," said Julie Yancey, managing director of development services at FedEx. "We used to think it was important for us to present a very formal, professional front. But now when we have [recruits] in and

"They're also the MTV generation. . . . They're used to multitasking as a way of life, so you need to provide lots of opportunity."

— Randy Pennington, business-culture consultant

the CIO does a presentation, the guys are in khakis and golf shirts," she said.

But experts warn that a cool culture isn't any guarantee of longer service or loyalty. Most new graduates want to work with bleeding-edge technologies and business-critical projects — from the very start.

Working on multiple projects with little supervision comes naturally to twentysomethings. "These are the lachry kids, and they're used to taking care of themselves, so you have to create an environment that allows them to be trusted in the long very quickly," said Randy Pennington, a business-culture

consultant in Dallas.

"They're also the MTV generation, so they think in very rapid-fire style. They're used to multitasking as a way of life, so you need to provide lots of opportunity," he said.

The quest for more opportunity is why Pullen, for example, changed jobs again within the past six months. He took a pay cut and left what he described as a developer's dream job at Millennium Corp. in Rochester, N.Y., to take an even

more challenging job working on data mining and fraud-detection systems at Chicago-based Magnify Corp.

"When I worked [before] was cool software development, working on exciting, high-end products. But one more component was missing. I wanted to be pushing the edge of technology and doing something really extraordinary. So, I took a risk to come out here," he said.

Employers can hold on to Generation X-ers a little longer if they provide the fun and geezy culture these young people want. But the trend is still toward multiple jobs for shorter periods of time — regardless of money, technology or culture.

Right now, Kim said he isn't thinking about leaving his job. "But Silicon Valley is so fast-paced. Opportunities pop up all the time," he said. "I didn't come in with the intent of moving on, but that doesn't mean I wouldn't be open to it." □

Living up to the generation

Some older software developers and project managers may think they have nothing to learn from baby boomers to a newly hired college graduate. But veterans with that attitude have no place at England Corp. in Cambridge, Mass.

One of the cardinal rules at the fast-growing, team-oriented systems integration firm is that everyone has something to contribute. And everyone leaves when everyone does.

"If you've got a problem listening to a 20- or 25-year-old, you've got a real problem," said Conway Dickson, a former elementary school teacher who heads up England's corporate culture programs. "If you just want to do your stuff with technology on your own, you're not going to be it here," she added.

Reports say generational issues are bound to crop up between baby boomers and Generation X-ers in today's team-oriented, work-based pay hard corporate cultures.

"Each group brings freedom and a lot of free time and flexibility," said Randy Pennington, a business-culture consultant.

But the baby boomers grow up under people who said you have to earn the right to those benefits. Generation X-ers just assume that's what they're due," he said. "It can cause frustration."

Sapient, for one, tries to head off problems by reinforcing team-oriented values during its two-day cultural boot camp, which emphasizes collaboration and openness.

Other companies, however, are still to follow suit. Pennington said the best and brightest young IS grads seek out firms that have

companies with an open environment, rather than to "a place where you don't speak until spoken to." — Julie King





Industrial

Strengthening.



Presenting the
world's first 10X
server for Windows NT

AQUANTA



**AQUANTA
XR/6 SERVER**

The first enterprise server
for Windows NT* with up to
ten 200 MHz Pentium Pro
processors. High-
performance system bus.
Up to 6GB ECC memory and
20MB L3 cache. Internal
RAID. Hot-pluggable drives,
power and cooling.
And VisiNet-II systems
management software.



**AQUANTA
HS/6 SERVER**

Engineered for maximum
availability, the HS/6 offers
up to six 200 MHz
Pentium Pro processors.
Dual peer PCI/ISA bus.
Six RAID-ready bays. 12 slots.
And up to 4GB ECC memory
and 512KB L2 cache.
Plus VisiNet-II systems
management software.
Rackmount also available.



**AQUANTA
DEPARTMENT
SERVERS**

Servers with one processor
to up to four 200 MHz
Pentium Pro processors.
Rackmount available for dual
and quad systems. VisiNet-II
systems management
software. Perfect for print,
file server and LANs.

www.aquanta-systems.unisys.com

CLICK HERE

to find out about our full line
of Aquanta products.

When information is everything

with data located behind a variety of
different operating systems—NT,
UNIX, MVS. The key thing we're
trying to do is pool that data together
from all sources and create informa-
tion out of it. We researched the
market a great deal to help us deve-
lop this new information.

Phil Green, Director
of Centralized Operations,
Energy Corp.

**Not Without
EMC Enterprise
Storage
They Won't.**

Consolidating information for business results is nothing more than wishful thinking without EMC Enterprise Storage™. With EMC at the center of the IT enterprise, business leaders now have the tools they need to leverage all of their information into a powerful competitive advantage. Finally, vast amounts of information can be managed, stored, protected, and rapidly shared simultaneously across all platforms – mainframe, open systems, NT, AS/400, you name it. EMC Enterprise Storage. For companies that want to grow as quickly as their information. To learn more, visit our Web site at www.emc.com, or call 1-800-424-EMC2, ext. 382.

EMC²

The Enterprise Storage Company

**SPECIAL
FOLD-OUT
POSTER**

Building a Unique

Competitive Advantage



Sun

COMPUTERWORLD

Sun Microsystems broadly defines e over interconnected networks

This definition opens up the scope of the electronic commerce market to include a host of product applications. In addition to a purchase made online, electronic commerce can include EDI; secure messaging; website content creation and management; database and legacy system integration; payment and billing systems; and secure electronic transactions, among others. To Sun, electronic commerce is the reliance on a network to perform business processes.

As a leading vendor of network-enabled products, Sun Microsystems offers the vision, expertise and mission-critical. And they are ready today. environment, the Ultra and Netra families of equipment to be the leading vendor of innovative



Active Software is the technology leader in network-centric system and information integration software. Its product architecture, ActiveWeb, is a simple, proven, easy-to-use productized solution for full integration of disparate systems.



Actia, a joint venture between Netscape and GE Information Services, provides Internet Commerce application solutions aimed at reducing costs, decreasing cycle times, and improving competitiveness in core business transactions.



Computer Associates International, Inc. (NYSE:CAI), with headquarters in Ithaca, N.Y., is the world leader in mission-critical business software. The company develops, licenses and supports more than 500 integrated products that include enterprise computing and information management, application development, manufacturing and financial applications. CA has 9,000 people in 130 offices in 40 countries and had revenue of more than \$3.9 billion in calendar year 1996. CA can be reached by visiting <http://www.cai.com> on the World Wide Web, emailing info@cai.com or calling 1-516-342-5226.



Since its foundation by Dr. Michael Cowland in 1985, Corel Corporation has maintained a consistently impressive growth rate by developing products known for excellence and value that target significant growth areas of the software industry. In 1997 Corel will ship Corel® Office for Java®, the first suite of office productivity applications written entirely in the Java programming language.



FileNet® Seros® Business Unit delivers advanced standards-based software that puts electronic documents to work as secure and re-usable information assets — available on demand across the office or around the world.



KIVA Software provides application server software — the KIVA Enterprise Server, for rapid development and deployment of Web-based business applications. Key features include high performance and scalability, application and system services, dynamic data access, and transaction management.



Work the Web today with Lotus® Domino™ — groupware and messaging for the Net — and Lotus Java Applets — business productivity applets for building interactive Web applications.



Marimba, Inc. is a privately-held software company whose products enable developers to create, deploy and maintain robust network-managed applications and multimedia experiences within enterprises and across the Internet. The company was founded in February 1996 by four members of the original Java development team at Sun Microsystems, including Jonathan Payne, Kim Polese, Sami Shata and Arthur van Hoff. Marimba received its initial round of venture funding from Kleiner Perkins Caufield & Byers.

Electronic commerce as doing business using web-based technologies.

cts that address access, publishing and security, and industry-leading technology to bring commerce. Sun's solutions are scalable, field-proven With technologies such as the Java programming servers, and Solstice SunScreen, Sun is well-ve electronic commerce solutions.

In addition to the breadth of its product offering, Sun has devoted resources to developing business relationships with many other leading companies, including those represented below. Sun is proud to team with these companies, and hundreds more, in building electronic commerce solutions of all kinds for our mutual customers throughout their enterprises.



Neoglyphics Media Corporation harnesses the power of the Internet to reengineer business processes and provide innovative solutions to business leaders and Fortune 500 companies pursuing a competitive edge. <http://www.neog.com>.



NETSCAPE

Netscape Communications Corporation is a leading provider of open software for linking people and information over enterprise networks and the Internet. The company offers a full line of clients, servers, development tools and commercial applications to create a complete platform for next-generation, live online applications.



Securely Integrating Your Host With The Internet/Intranet

OpenConnect Systems — "Securely Integrating Your Host With the Internet/Intranet." Companies with mainframe and midrange computers can offer authorized users secure access to host applications via the Internet or corporate Intranet.



By All Internet Commerce

Open Market, Inc. develops high-performance software products that allow its customers to engage in business-to-consumer and business-to-business Internet commerce. Our approach places secure Internet commerce solutions within the reach of businesses of all sizes.



Premenos provides electronic commerce solutions for trading communities. Standards-based applications leverage the strengths of EDI, TCP/IP and Web technologies. Our market-proven innovations include network-independent technology for secure transmissions over the Internet.



Steam Communications, a startup company in San Jose, Calif., is dedicated to providing Web-based collaborative software solutions which enhance the productivity of individuals and groups. Steam delivers solutions that help people perform everyday tasks — only better, faster and more conveniently, so that more time can be devoted to mission-critical tasks.



Technology Applications, Inc. provides Information Technology consulting for Internet and Intranets, and complete Internet access, customer care and billing solutions to telecommunications companies and Internet Service Providers worldwide.



Pure Java server solutions for networked applications. Elevate your business application to the enterprise with WebLogic's 100% Java database access, real-time event management, and remote computing services.



WebSpeed™, from Progress Software Corporation, is an open development and deployment environment which enables organizations to quickly and productively build secure Internet Transaction Processing applications on the Internet and corporate intranets. URL: <http://www.progress.com>.

Sun Microsystems broadly defines e over interconnected networks

This definition opens up the scope of the electronic commerce market to include a host of product applications. In addition to a purchase made online, electronic commerce can include EDI; secure messaging; website content creation and management; database and legacy system integration; payment and billing systems; and secure electronic transactions, among others. To Sun, electronic commerce is the reliance on a network to perform business processes.

As a leading vendor of network-enabled products, Sun Microsystems offers the vision, expertise, and mission-critical. And they are ready today. environment, the Ultra and Netra families of equipment to be the leading vendor of innovat



Active Software is the technology leader in network-centric system and information integration software. Its product architecture, ActiveWeb, is a simple, proven, easy-to-use productized solution for full integration of disparate systems.



Actix, a joint venture between Netscape and GE Information Services, provides Internet Commerce application solutions aimed at reducing costs, decreasing cycle times, and improving competitiveness in core-business transactions.



Computer Associates International, Inc. (NYSE:CAI), with headquarters in Islandia, N.Y., is the world leader in mission-critical business software. The company develops, licenses and supports more than 500 integrated products that include enterprise computing and information management, application development, manufacturing and financial applications. CA has 9,000 people in 130 offices in 40 countries and had revenue of more than \$3.9 billion in calendar year 1996. CA can be reached by visiting <http://www.cai.com> on the World Wide Web, emailing info@cai.com or calling 1-516-343-5224.



Since its foundation by Dr. Michael Cowland in 1985, Corel Corporation has maintained a consistently impressive growth rate by developing products known for excellence and value that target significant growth areas of the software industry. In 1997 Corel will ship Corel® Office for Java®, the first suite of office productivity applications written entirely in the Java programming language.



FileNet® Seros® Business Unit delivers advanced standards-based software that puts electronic documents to work as secure and re-usable information assets — available on demand across the office or around the world.



KIVA Software provides application server software — the KIVA Enterprise Server, for rapid development and deployment of Web-based business applications. Key features include high performance and scalability, application and system services, dynamic data access, and transaction management.



Work the Web today with Lotus® Domino™ — groupware and messaging for the Net — and Lotus Java Applets — business productivity applets for building interactive Net applications.

marimba

Marimba, Inc. is a privately-held software company whose products enable developers to create, deploy and maintain robust network-managed applications and multimedia experiences within enterprises and across the Internet. The company was founded in January 1996 by four members of the original Java development team at Sun Microsystems, including Jonathan Payne, Kim Polese, Sami Shiao and Arthur van Hoff. Marimba received its initial round of venture funding from Kleiner Perkins Caufield & Byers.

Electronic commerce as doing business using web-based technologies.

cts that address access, publishing and security, and industry-leading technology to bring commerce. Surf's solutions are scalable, field-proven. With technologies such as the Java programming servers, and Solstice SunScreen, Sun is well-ve electronic commerce solutions.

In addition to the breadth of its product offering, Sun has devoted resources to developing business relationships with many other leading companies, including those represented below. Sun is proud to team with these companies, and hundreds more, in building electronic commerce solutions of all kinds for our mutual customers throughout their enterprises.



Neoglyphics Media Corporation harnesses the power of the Internet to reengineer business processes and provide innovative solutions to business leaders and Fortune 500 companies pursuing a competitive edge. <http://www.neog.com>



NETSCAPE

Netscape Communications Corporation is a leading provider of open software for linking people and information over enterprise networks and the Internet. The company offers a full line of clients, servers, development tools and commercial applications to create a complete platform for next-generation, live online applications.



OpenConnect Systems — "Securely Integrating Your Host With the Internet/Intranet." Companies with mainframe and midrange computers can offer authorized users secure access to host applications via the Internet or corporate intranet.



Open Market, Inc. develops high-performance software products that allow its customers to engage in business-to-consumer and business-to-business internet commerce. Our approach places secure Internet commerce solutions within the reach of businesses of all sizes.



Premenos provides electronic commerce solutions for trading communities. Standards-based applications leverage the strengths of EDI, TCP/IP and Web technologies. Our market proven innovations include network-independent technology for secure transmissions over the Internet.



Steam Communications, a startup company in San Jose, Calif., is dedicated to providing Web-based collaborative software solutions which enhance the productivity of individuals and groups. Steam delivers solutions that help people perform everyday tasks — only better, faster and more conveniently, so that more time can be devoted to mission-critical tasks.



Technology Applications, Inc. provides Information Technology consulting for Internet and intranets, and complete Internet access, customer care and billing solutions to telecommunications companies and Internet Service Providers worldwide.



Pure Java server solutions for networked applications. Elevate your business application to the enterprise with WebLogic's 100% Java database access, real-time event management, and remote computing services.



WebSpeed™, from Progress Software Corporation, is an open development and deployment environment which enables organizations to quickly and productively build secure Internet Transaction Processing applications on the Internet and corporate intranets. URL: <http://www.progress.com>.

Special Advertising Insert

ELECTRONIC COMMERCE

ARCHITECTURE

Doing business over a network continues to grow as a driving force of many of today's computing resources. Because the way in which companies do business is rapidly changing and evolving, the most successful

**electronic commerce
solutions must be**

REMOTE
EMPLOYEE

CUSTOMER

INFORMA

NAVIGATE

PROFILIN
WEB USA

ENTRANET

INTERNAL
EMPLOYEE

MULTIMEDIA DATABASE

COMMUNICATIONS SERVER

GROUPWARE/MESSAGING

DOCUMENT MANAGEMENT

WEBTOP/OFFICE
PRODUCTIVITY

ATION PUSH

ON/SEARCH

GE AND ANALYSIS

**solutions must be
innovative,
scalable and secure.**

Sun offers all the resources for
bringing together all the pieces of
an electronic commerce framework,
plus a host of third-party products
and services to complete the solution.

**Sun is the one
companies can
count on**

to provide an innovative, secure and
robust environment for doing business
over interconnected networks.

EXTRANET

TRADING/BUSINESS
PARTNER

WEB USA

ADVERTIS

MERCHAN

- CATALOG
- INFORMATION
- ON-LINE
- PUBLIC

BILLING

INTERNET

INTERNET

Sun Microsystems wishes to thank these companies who have co-sponsored this publishing program with helping our mutual customers build electronic commerce solutions into their businesses, for unique susta



COMPUTER
ASSOCIATES
Software supported by design

COREL



KIVA SOFTWARE



LOUIS
Scaling Together

marimba



N

GE AND ANALYSIS

ING

IT SERVER
G
ATION
E COMMUNITY
ATION

Secure
PAYMENTS

/EDI

AUTHENTICATION

SECURE MESSAGING

WEBSITE/OFFICE
PRODUCTIVITY

EXTRANET

AUTHORIZING/
APPLICATION
DEVELOPMENT
TOOLS

LEGACY/WEB
MIDDLEWARE WEB SITE
MANAGEMENT

CONTENT
MANAGEMENT

DATA WAREHOUSING/
DECISION SUPPORT SYSTEM

CUSTOMER ACCOUNT
DATABASE

ERP SYSTEM

INTRANET



THE NETWORK IS THE COMPUTER

COMPUTERWORLD
Custom Publications

us. Together with us, they and the many other solutions providers we work with are leading the way in
inable competitive advantage.




OPENCONNECT
1 2 3 4 5 6 7 8 9 10 11 12
Security Networking (NAT) for the Internet



WebLogic

WebSpeed



**Guess which company can take
you where you want to go
on the Internet?**

THE NETWORK IS THE COMPUTER



Computer Industry

Briefs

Apple and Ellison don't mix

► Oracle CEO gives up plan to acquire Apple

By Lisa Picarelle

MACINTOSH USERS who were losing sleep over the prospect of Larry Ellison taking over their beloved Apple Computer, Inc. can rest easy—at least for now.

Oracle Corp. Chairman and CEO Ellison in March said he planned to form an investor group to look at purchasing Apple. He announced last week that he isn't talking to Apple or its shareholders about a possible acquisition. It was the third time in the past three years that Ellison had floated trial balloons about taking over Apple.

Ellison's bid, made independently of Oracle, received a lukewarm response that turned cold when said Macintosh users threatened to boycott Oracle's



Apple's recent \$700 million loss may have popped Ellison's takeover balloon

products if Ellison made a move for Apple.

Macintosh users were further rankled by Ellison's statements last month to a Japanese newspaper that his potential plans for Apple included leveraging the Cupertino, Calif., computer

maker to fit in his network computer vision.

One analyst said it could be that further inspection of Apple revealed the company wouldn't be easily adapted to Ellison's vision. "I think he realized that it would be a bad deal from a purely financial basis because he could not use Apple's current line to promote his [network computer] premise," said Joe Perla, an analyst at Technology Business Research, Inc., a market research firm in Hampton, N.H.

Apple's recently reported loss of more than \$700 million for its most recent quarter also may have been a factor, he said.

"This has been kind of his pet project, but it seems that it got closer to reality, the time and effort that would have to go into making it happen was not nearly as gratifying to his ego," he said. □

Profits up for client/server tool makers

By Randy Weston

CLIENT/SERVER software companies racked up strong first-quarter profits, sparked by users who are looking for business applications that provide a competitive edge and mainframe users who are solving their year 2000 problems.

Market leader SAP AG in Wayne, Pa., and rivals The Baan Co. in Menlo Park, Calif., and PeopleSoft, Inc. in Pleasanton, Calif., all posted strong first-quarter financials (see chart).

But the success is extending to almost every corner of the client/server application field as niche players also cash in on corporate software buying spree.

"Applications in general are capturing a greater and greater portion of the total IS budget," said Andrew Rodkill, an investment analyst at Smith Barney, Inc. in New York.

Rodkill attributed the trend to

Client/server applications vendors report strong first-quarter results				
Vendor	Q1 1996 revenue	Q1 1997 revenue	Q1 1996 profit	Q1 1997 profit
SAP*	\$472M	\$677M	\$49M	\$120M
Baan	\$78M	\$134M	\$4.3M	\$12.3M
PeopleSoft	\$63M	\$154M	\$9.4M	\$18M

*Revenues referenced to December 31st. Results based on the March 31 exchange rate of \$1 U.S. per £0.625.

several factors. He said users are finding greater value in these applications because vendors are improving functionality. And these systems provide "rapid [return on investment] and payback, so it's easy to justify them," Rodkill said.

Another factor is the quickly approaching millennium.

"As more and more companies realize we are getting closer to the year 2000, they are taking a hard look at how much they are spending on old mainframe, hard-core Cobol code," Rodkill said. Those companies increasingly are turning to client/server and "accelerating their migration plans," he said.

The enterprise-wide vendors aren't the only ones riding the client/server wave. Niche mar-

ket players — particularly those in the supply-chain software fields — are also seeing profits and sales skyrocket.

For example, Ix Technologies, Inc. in Irving, Texas, posted profits of \$1.7 million for the first quarter, more than three times the \$507,000 it earned in the same period last year. Software licenses accounted for \$20.9 million of the \$12.4 million in total revenue.

Manugistics, Inc. also continued to show strong gains during the period. The Rockville, Md., company's profits jumped 80% in its recently ended fiscal year to \$8 million from \$4.4 million.

The results don't include a one-time charge of \$1.7 million that Manugistics spent for research and development. □

Struggling AST gets new chief

By April Jacobs

SAMSUNG ELECTRONICS CO. has put a corporate underdog at the helm of struggling PC maker AST Research, Inc.

Samsung, which owns 40% of AST and plans to complete a total buyout on May 19, has named Soon-Tek Kim, president and chief executive of Samsung Heavy Industries, as AST's new CEO. He replaced Young Soo Kim, who resigned for personal reasons.

AST, in Irvine, Calif., recently announced a first-quarter loss of \$10 million and a layoff of 1,000 workers.

AST officials couldn't be reached for comment. Clara Kim, a spokesperson for Seoul, Korea-based Samsung, said it was too early to make an announcement about how Soon-Tek Kim would tackle losses at AST.

"Right now, the company is really in a reorganization and streamlining stage to save some overhead," said Clara Kim. Samsung hopes to go public with a new marketing strategy about the time it completes the buyout of AST, she said.

Ian Chen, an analyst at Micro-design Resources, Inc. in Sunnyvale, Calif., said AST needs to differentiate itself from other hardware vendors and deliver products on time. "I think there are some fundamental things they need to give customers, and one is a reason to buy an AST machine — something that we can uniquely offer to customers. One key differentiating factor is graphics," Chen said.

He said AST also will need to convince its channels that its machines are up to par. "When people go to choose, AST sort of loses out in terms of brand name. AST's products over the last few years have been lackluster," he said.

AST lost about \$418 million last year. Samsung invested \$178 million in the company in 1995. Its plan to acquire AST is a \$475 million deal. □

How long will it take before you with their credit

{ Imagine if it



The impact on your business would be enormous. The ROI nearly immediate. But the revenues generated from secure credit card transactions are just the beginning. Suddenly you're able to share confidential information over the Internet with your customers, employees and business partners. Your business becomes more efficient and competitive.

So what does it take to begin? A partner who truly understands the impact networking can have on your business, and knows how to implement it down to the last strand of wire and the last packet of data. We're that partner. Our technologies

**your customers finally trust
cards over the Internet?**

happened next month. }

made the Internet a global reality. Today, Cisco networking products and Cisco IOS™ software are making the Internet safe for secure business transactions of all kinds. Call us at 1-800-778-3632, ext. 192000.

Or visit our Web site at www.cisco.com

After all, there's no reason to keep your customers waiting.

The network works. No excuses.™

CISCO SYSTEMS



Time is money What would you do if your boss told you to imple-

ment a new system right now? Don't worry, money is no object. The company needs this up and running pronto — or it risks losing a fortune.

That's what the IS team at Ty, Inc., the toy maker responsible for Beanie Babies, was up against. Creating demand for the small, stuffed creatures was overwhelming Ty's order entry system. The company would lose millions of dollars in sales if it failed to install a new one.

Every company should be so lucky. Surveys nowadays show that both business and IS leaders want to match the promises of technology to their business needs. They don't want IS just to count the goods and dollars; they want IS to add value to what they do. It's a clear theory, but it isn't so easy to follow in practice.



At the toy company, Beanie Babies represent a clear business need that technology can fulfill. The company needed a new order entry system — and fast. That clarity and sense of purpose brought other benefits to the Beanie Babies maker, as Computerworld reported last week.

First, management stated its commitment to IS success. "I had an open door to get the best thing that would work," said Chris Johnson, Ty's MIS director. Second, Ty devoted itself to staff training to make its new system work with lots of new hires coming on-board.

And third, the urgency created an environment where IS managers felt they could take calculated risks to meet their goal. For example, Ty slashed the time for testing its new system because it was more important to answer 100 daily order calls.

We're talking about Beanie Babies, here. Imagine if every company's IS needs were so clearly tied to the bottom line.

Michael Goldberg

Michael Goldberg, assistant sections editor
Internet: michael_goldberg@cw.com



Sun had better open the blinds

I READ DAVID COURSEY'S commentary in the April 21 issue of Computerworld ("What keeps Sun awake at night?").

I and I think the people at Sun need to wake up. They have a golden opportunity to make some inroads against Microsoft, and they're missing it. The questions they are asking show just how out of touch they are. What's keeping Microsoft on the desktop (and pulling them to the server side) isn't application programming interfaces or technology; it's the applications — Microsoft Office, mostly.

If Sun could come up with a competitive office suite and provide a top-notch development studio and tools for third-party developers, you'd probably see Bill Gates starting to think about retirement.

I've developed extensively in both Unix and NT. Unix, by far, is better on the server side.

But most people will want Windows for the desktop. Java, the Internet and network computers present a new user/interface paradigm, and it's going to take a concentrated effort by a major Unix vendor such as Sun to provide the applications to make people want something besides Windows in their homes and offices.

Chris Scott
Soughton, Mass

IN REGARD TO David Coursey's column. If you are going to ponder some important issues about Sun, you might ask them why they have Solars for both SPARC and

x86, but when it comes to developing leading-edge network software, they give every appearance of preferring Windows NT over their own x86.

My off-hours job is developing a software package for securities data analysis. I chose the Solaris x86 environment, hoping it was a good long-term growth choice. Sadly, many of the Web tools that Sun develops are released for SPARC and NT first.

I think this approach hurts Sun's market position in the long term and only serves to reinforce the great lead in this market that Windows NT enjoys.

Someone needs to remind Sun's management that they are obligated to improve the price of Sun's stock, not Microsoft's.

Elvin Barnett
Ashland, Mo.
evn@acm.org

Connect-the-dots marketing

AM I THE ONLY one who thinks the current advertising from Lotus is stupid? I can almost hear neurons at Lotus dying of loneliness.

What is "Work the Web" or "SmartSuite 97"? Does using dots everywhere make it better or mean anything? When I am called in for groupware consultations, I advise my clients to give Lotus a wide berth until the company gets through puberty.

Peter Hoffman
President, Geac Corp.
Greenville, S.C.
pet@geacorp.com

User group gets along just fine with Oracle

AS PRESIDENT of the International Oracle Users Group—America (IOUGA), I would like to respond to your article "Oracle user group shows tries to go it alone" (CW, April 21). The IOUGA and Oracle Corp. enjoy an excellent working relationship. We are working together to offer Oracle users two events each year: Oracle OpenWorld and International Oracle User Week. Those events are developed and designed to complement each other, not to conflict or compete with each other.

Contrary to what was expressed in the article, the IOUGA wasn't "going it alone" with International Oracle User Week '97 (April 27 to May 2). We worked closely with Oracle representatives throughout the entire planning process and look forward to their active participation. The IOUGA and Oracle have signed an official agreement to continue these cooperative commitments into the future.

Merrilee Nohr
IOUGA
Chicago

More letters, page 36

Computerworld welcomes comments from its readers. Letters shouldn't exceed 500 words and should be addressed to MaryAnn Johnson, Executive Editor, Computerworld, PO Box 917, 900 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8531; Internet: letters@cw.com. Please include an address and phone number for verification.

READ FOR POWER

☒ Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ PE _____ Last Name _____

Title _____ Company _____ E-mail address _____

Address _____ City _____ State _____ Zip _____
 Address Street: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price \$1.00/issue
 *U.S. Only. Canada \$10. Mexico Central/South America \$10. Europe \$25. All other countries \$25.

Please complete the questions below.

- I. BUSINESS/INDUSTRY** (Circle one)
- 10 Manufacturer (other than computer)
 - 20 Financial/Insurance/Real Estate
 - 30 Medical/Law/Education
 - 40 Wholesale/Retail Trade
 - 50 Business Services (except DPs)
 - 60 Government - State/Federal/Local
 - 70 Communications/Transportation/Utilities/Transportation
 - 80 Planning/Construction/Personnel/Relating/Architecture
 - 90 Manufacturer of Computers, Computer-Related Systems or Peripherals
 - 95 Systems Integrators/VMS, Computer Service Bureaus, Software Planning & Consulting Services

- 2. TITLE/FUNCTION** (Circle one)
- IS/MS/OP MANAGEMENT**
- 1 Chief Information Officer/Vice President/Chief VP/IS/MS/OP Manager
 - 21 Director MIS Services, Information Center
 - 22 Director Network Sys. Dept./Sys. Control, LAN/Hy/PC, Hyg. Tech. Planning/Administrative Services
 - 23 Director Sys. Development, System Architecture
 - 31 Programming/Management, Software Developers

- 41 Engineering/Scientific/R&D Tech. Management**
- 50 Sys. Integrators/VMS/Consulting Management**
- CORPORATE MANAGEMENT**
- 11 President, Owner/Partner, General Mgr.
 - 12 Vice President, Asst. Vice President
 - 13 Treasurer/Controller/Financial Officer
- DEPARTMENTAL MANAGEMENT**
- 51 Sales & Mktg. Management
 - 70 Physical, Legal/Accounting Mgt.
- OTHER PROFESSIONAL MANAGEMENT**
- 80 Information Consultant/Library, Education, Journalism, Scouting
 - 90 Other Titled Personnel

- 3. Do you use emulators, specify recommend, purchase** (Circle all that apply)
- Operating Systems**
- (a) System (b) Mac OS
 - (c) Netware (d) Windows NT
 - (e) OS/2 (f) Windows
 - (g) Unix (h) Mac/Trap
- App. Development/Tools**
- (i) Yes (j) No
 - (k) Yes (l) No
 - (m) Yes (n) No
- 4. Which of the following products do you buy, specify recommend or approve the purchase of** (Check all that apply)
- (a) Internet software
 - (b) Intranet software
 - (c) Web authoring/development tools
- 5. Do you use the Internet?** ☐ Yes ☐ No

COMPUTERWORLD

B4E7 Y

READ FOR KNOWLEDGE

☒ Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ PE _____ Last Name _____

Title _____ Company _____ E-mail address _____

Address _____ City _____ State _____ Zip _____
 Address Street: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price \$1.00/issue
 *U.S. Only. Canada \$10. Mexico Central/South America \$10. Europe \$25. All other countries \$25.

Please complete the questions below.

- I. BUSINESS/INDUSTRY** (Circle one)
- 10 Manufacturer (other than computer)
 - 20 Financial/Insurance/Real Estate
 - 30 Medical/Law/Education
 - 40 Wholesale/Retail Trade
 - 50 Business Services (except DPs)
 - 60 Government - State/Federal/Local
 - 70 Communications/Transportation/Utilities/Transportation
 - 80 Planning/Construction/Personnel/Relating/Architecture
 - 90 Manufacturer of Computers, Computer-Related Systems or Peripherals
 - 95 Systems Integrators/VMS, Computer Service Bureaus, Software Planning & Consulting Services

- 2. TITLE/FUNCTION** (Circle one)
- IS/MS/OP MANAGEMENT**
- 1 Chief Information Officer/Vice President/Chief VP/IS/MS/OP Manager
 - 21 Director MIS Services, Information Center
 - 22 Director Network Sys. Dept./Sys. Control, LAN/Hy/PC, Hyg. Tech. Planning/Administrative Services
 - 23 Director Sys. Development, System Architecture
 - 31 Programming/Management, Software Developers

- 41 Engineering/Scientific/R&D Tech. Management**
- 50 Sys. Integrators/VMS/Consulting Management**
- CORPORATE MANAGEMENT**
- 11 President, Owner/Partner, General Mgr.
 - 12 Vice President, Asst. Vice President
 - 13 Treasurer/Controller/Financial Officer
- DEPARTMENTAL MANAGEMENT**
- 51 Sales & Mktg. Management
 - 70 Physical, Legal/Accounting Mgt.
- OTHER PROFESSIONAL MANAGEMENT**
- 80 Information Consultant/Library, Education, Journalism, Scouting
 - 90 Other Titled Personnel

- 3. Do you use emulators, specify recommend, purchase** (Circle all that apply)
- Operating Systems**
- (a) System (b) Mac OS
 - (c) Netware (d) Windows NT
 - (e) OS/2 (f) Windows
 - (g) Unix (h) Mac/Trap
- App. Development/Tools**
- (i) Yes (j) No
 - (k) Yes (l) No
 - (m) Yes (n) No
- 4. Which of the following products do you buy, specify recommend or approve the purchase of** (Check all that apply)
- (a) Internet software
 - (b) Intranet software
 - (c) Web authoring/development tools
- 5. Do you use the Internet?** ☐ Yes ☐ No

COMPUTERWORLD

B4E7 Y



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 558 MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 558 MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



Web chat: Free and worth every penny

Robert L. Scheier

Ah, the beauty of "increasing returns." That's what economists call it when making money helps you make more money.

Take Microsoft's dominance in desktop operating systems. The more people buy Windows, the more demand there is for Windows applications. Which means more

demand for Windows development tools, which means more Windows applications, which means more demand for Windows operating systems. Assuming Microsoft keeps upgrading its products on all fronts, the cycle feeds itself.

Then there's the telephone. One telephone is pretty useless. But when you get to 20 million phones, or 200 million, each new customer not only lowers the price through economies of scale, but makes telephone service more attractive.

Locked on that commonsense observation is the key to—finally—making money on the World Wide Web. Or so

People are willing to pay someone to collect and present information in a more understandable form.

argue John Hagel III and Arthur G. Armstrong, two McKinsey & Co. consultants, in their book, *Not Gains* (Harvard University Press, Boston, \$29.95). Their vision is of "virtual communities" on the Web, where each new member of a chat group, everyone who logs on to offer an opinion, adds to the value of the site.

The better the content, the more companies will advertise on a site or sell their

wares on it. The more companies on the site, the more customers will flock to it, drawing more companies, and so on.

Simply by volunteering their opinion, advice or experience, customers add value to a site in ways the site owner can't, because customers are the ones who share the common interest, passion or problem that draws others to the site.

In this happy scenario, customers add value virtually free, kind of like relatives who visit for a long weekend and repaint your kitchen while they're there.

Hagel and Armstrong have a lot of things right, in my view, but a few things dangerously wrong.

They're right that the secret to the Web is not only content,

but also communication—community, in use their word. Railroad hobbyists or job seekers or cancer patients can share ideas, information and insights regardless of location, age or station in life.

What the authors underestimate is the cost and complexity of making that information usable. Ever scroll through a Usenet discussion thread trying to find an answer to a specific question? It can be a tiresome, mind-numbing process. As the

number of chat rooms, threads and sub-sub-sub-discussion groups grows, it will become harder to manage, describe and index all that chat so anyone can find anything useful.

Those tangles of talk are like data warehouses sitting on the Web, and they'll be just as expensive to manage as a traditional data warehouse.

Then there are questions of maintaining response times if, heaven forbid, you're successful and everyone and their brother mobs your site. Preventing an AOL-type system meltdown takes time, money and planning.

The authors of *Not Gains* note that the creators of one virtual community, the Motley Fool investment site, branched out by writing a book. People buy books—and, yes, newspapers—because they're willing to pay someone to collect, distill and present a flood of information in a more understandable form.

At some point, your virtual community will need that same kind of content management.

Factor those costs in to your Web business model or risk missing out on those increasing returns. □

Scheier is Computerworld's senior editor, management.

There oughta be a (Schrage's) law

Michael Schrage

Bob Metcalfe has one. Bill Joy has one, too. Gordon Moore's has been at the white-hot center of controversy in every serious conversation about the future of the semiconductor industry for more than a generation. Naturally, I'm consumed with envy and ideas, so I want one, and I want one now!

Certainly, Moore's Law on the doubling of circuit density every 18 months has done pretty well for Gordon's reputation. Bob's Law on Networks, about the power of a network increasing with the number of nodes connected to it, and Bill's Law that there are more bright people outside your organization than in it, have burnished their images as well.

An important law has to say something provocative, profound and/or predictive in a way that makes smart people think twice.

I think I've got one. It smacked me in the synapses a couple of years ago as the Internet frenzy began and I observed how media companies, telephone companies and financial service companies really create value

through their networks.

I've trotted "Schrage's Law of Networks" by people whom I respect, and quite frankly, I think recent trends in networking underscore its growing importance. To be sure, this is a law that every CIO and IS department should take to heart.

So just what is Schrage's Law of Networks? The surest way to add value to a network... is to connect it to another network.

Think about it. What is the Internet but a network of networks?

Federal Express depends on the way it links its telecommunication networks with its telecommunications net-

works with its computer networks. QVC fuses cable TV networks with telephones with overnight delivery networks to create a multibillion-dollar home shopping infrastructure. MSNBC and CNN link TV with the World Wide Web. American, United and Delta airlines all link their reservations networks with their frequent-flyer networks.

The point is simple: Networks become gateways to other networks. The challenge is to capture the value created by that new interaction.

The hoary cliché that "content is king" is less a truism than a piece of idiosyncrasy.

The real value resides in how and why networks get connected to other networks—in other words, be-

come the "content" for others.

Simply slapping yet another database on an intranet is neither the best nor the surest way to add value to that network.

The best way to add value to that intranet is to figure out which networks should be connected to it. The call center? The technical support network? Voice mail? Your customer or supplier networks? (Indeed, I prefer the word "intranet," which McKinsey & Co.'s Brook Marville and I have coined, rather than "extranet.")

Two married intranets haven't just extended each other, they've become a new ecology that transcends the sum of its parts.

The great thing about Schrage's Law of Networks—besides the nifty name—is that it encourages organizations to rethink the value of their intranets and networks.

Ultimately, of course, all laws are broken. But, like Moore's, Metcalfe's and Joy's laws, mine is a law that shouldn't be ignored. □

Schrage is a research associate at the MIT Media Lab and author of *No More Teams!* His Internet address is schrage@media.mit.edu.

The value resides in how and why networks get connected to other networks.



Laptop luxury?

ABOUT YOUR STORY, "Laptop innovations are airborne" [CW, April 14], it's interesting to read that at least a few of the U.S. airlines are interested in providing better in-flight working services such as AC power outlets and more ver-

satile data phones. But all that will only benefit those few who sit in first class or are lucky enough to get a bulkhead seat in peasant class.

Until the airlines expand seating space, most of us will continue to be unable to even fully open our notebook PCs, let alone worry about running down the

battery or sending data into the ether.

Jim Brown
Frankenmuth, Mich.

Intranet audits already common, maybe useless, IS practice

SPEAKING AS SOMEONE who works for a leading intranet consultancy that has advised, designed and built dozens of

Fortune 500 intranets since 1994, I have a couple of comments for Computerworld columnist Michael Schrage ("Make peace with guerrilla intranets," April 7).

Schrage's "intranet audit" is alive and well. We do it all the time, because every Fortune 500 company we've ever consulted for has [roque intranets] they didn't know about. Every company.

Knitting together intranets is actually a common practice. The reality is that IS departments can't go around killing rogue intranets in favor of corporate ones. When they try, the various departments either ignore them, revolt or simply build again. Intranette-innovative departments already wield considerable power and influence when it comes to intranets. The buck stops with them, not with the IS department.

Michael Rudnick
Cognitive Communications
New York
mr@cogit.com

AS/400s still the way to go

IN COMPUTERWORLD'S April 14 article, "NT link helps AS/400 hold its ground," United Auto Parts applications development manager Marc Dorais said, "The price of a strong NT server is cheaper than upgrading AS/400. And our expertise is going in that direction [NT]."

Mr. Dorais is suggesting that the hardware price difference between the AS/400 and an NT server has prompted phase-out plans of the AS/400 in their retail locations.

In light of the expenditures required for application conversion and retooling the development staff—not to mention end-user training—I am confounded by this attempt to insult the intelligence of every AS/400 manager.

Laif L. M. Johnson
Silver City, New Mexico
llm@zianet.com

Legacy systems users have edge when it comes to convenience

EDITOR PAUL GILLIN's column "Open systems pain," CW, April 14] hits the nail on the head. I have been in the computer software business for 34 years, performing data conversions. I have had many clients on various legacy platforms from Wang VS, IBM S/36 and AS/400 to the new client/server technology of RISC-based and Pentium-based systems.

Most of these clients ended up doubling their MIS departments; experienced numerous integration issues and increased downtime; and ended up cloning the new system to the legacy system. Education is mandatory to enlighten users regarding Open Database Connectivity, third-party database tools, report writers, etc.

It seems the budget stops immediately upon the live date, and top management never realizes the benefits that could be reaped in the client/server arena.

John Frederick
Open Systems Design
Rancho Mirage, Calif.

At Computerworld, our editorial policy is simple.

If a story is useful and accurate, it runs. If it's also timely and a bit provocative, all the better. Our goal is to provide you, our reader, with the truth.

As IT leaders, we know you're under siege. 1700 thoughtless claims. Technology that changes every 18 months or so and impacts all you painstakingly built. New products you need evaluated immediately.

Changes in corporate strategy that could impact your entire department.

One thing you can count on. Computerworld. In our pages you get solid reporting, incisive industry trends, timely news, unflinching editorial, unbiased reporting. We know you need this information to evaluate new products. To get a candid view of emerging technologies. To find out the inside story on corporate strategies. To decide whether to jump ship or stay in your current job. To get

the edge on your competition.

Get the best of straightforward, impartial reporting you can count on. Because we never forget who we're talking to.

Order today and you'll receive \$1 information-packed issues of Computerworld.

Call us at 1-800-343-6474 or visit us on the world wide web at www.computerworld.com. To order by mail, use the postage-paid subscription card bound into this issue.

COMPUTERWORLD
The Authority for Technology Information

ADAPTIVE
NETWORKING.™



IT'S LIKE
ANGIOPLASTY
FOR CLOGGED
NETWORK
ARTERIES.



Bay Networks

Don't miss Dave House's keynote address on May 5th at InterOp. Then visit us at Booth 2105.

©1997 Bay Networks, Inc.

COMMENTARY

The NC/Apple connection

DAVID MOSCHELLA

Say what you will about Larry Ellison's style, the fact remains that during the past 18 months, Oracle's CEO has almost single-handedly changed the computer industry conversation. And he isn't done yet. He won't be

buying Apple, but don't be surprised if he enlists Apple in his network computer, thin-client vision.

The network computer concept has gained momentum. In less than a year, Microsoft's attitude toward network computers has gone from outright ridicule to conceptual validation (the NetPC and Zero Admin-

stration initiatives) to \$425 million worth of consumer market enthusiasm (the WebTV acquisition) and, most recently, to full-blown business recognition (the Windows terminal).

Apparently, Bill Gates now agrees with the Duches of Windows' old truism: you never be too rich or too thin. Ditto for Andy Grove, whose company changed its tune after the network computer industry shifted toward Intel-based systems.

Despite these endorsements, network computers continue to face formidable barriers to widespread business and consumer acceptance: applications availability, systems compatibility, bandwidth capacity and so on. Without boosters, the momentum might stall. Enter Apple, which has three things the network computer camp badly needs: customers, technology and brand recognition.

Which customers? Nobody knows the K-12 market better than Apple. Schools, with their combination of price sensitivity, low PC penetration and non-IT trained staff, are an ideal target market for the \$5,000 "network-in-a-box" promoted by Oracle's wholly owned subsidiary, Network Computer, Inc. (NCI). It's an easy-to-install, Web-centric system with a \$1,500 server and cheap network computers. Even modest sales would attract huge international attention.

On the technology front, keep an eye on Apple's FireWire (IEEE 1394), which, through a common bus and plug, can provide fast and simple connections among PCs, TVs, stereos, VCRs, CD players, camcorders and such.

But to really get consumers' attention, Apple or NCI needs to marry FireWire-like convergence with network computer-type price points in a package worthy of Apple's design and user-interface expertise. Creating that new market space will require strong support from the consumer electronics and broadcast industries, which Microsoft probably won't get.

It's no accident that NCI is already thinking globally. Asian markets in particular offer a compelling combination of pent-up Internet demand, low PC penetration, strong consumer electronics focus and anti-Wintel vendor inclinations. If Apple is added to the current alliances with NEC and Philips, NCI would have a powerful worldwide brand position.

So even without a buyout, Apple and Larry Ellison have a lot to talk about. Let the Macintosh group go all out to extend the life of that product family. Meanwhile, let Apple focus on computers/consumer electronics/telephony integration and simple network computer-based systems for the worldwide education market. If Apple can regain its place in those segments, it will have earned a second look from small businesses and corporate America. And Larry Ellison will be further down the path toward developing computers "for the rest of us." □

Moschella is senior vice president of research at Computerworld, Inc. His Internet address is david_moschella@cw.com.

how do

about 5,000

the number 3

it no way

C.H.

that bases

on

?

how

whole

damn stuff



Seagate Software
1-800-877-2340-45

Intranet support will
be critical for your
future advancement.

Last year we conducted an electronic survey of our attendees and discovered 68% believed strong support of intranets within their organizations will be critical for future CIO career advancement. And we know why; this technology is helping today's businesses operate more efficiently and

helping achieve greater operating efficiencies.

Now in its second year, the Computerworld intranet '97 Conference™ will bring together CIO's and senior IT executives to explore the benefits of intranets and set an agenda for taking this

technology into the 21st century. From process and environments, and ROI, to the future of intranets, you'll come away from this conference with a strategic understanding of intranets, along with the know-how to put this exciting technology to work for your organization... and best of all it's produced by Computerworld, the Newsweekly for Information Technology Leaders.

Besides our detailed CIO-presented sessions you'll have the chance to network with other senior IT executives, listen to dynamic keynote presentations from today's top industry technologists, participate in our conference "insta-polling," where you get to offer your opinions about the strategies you'll be setting and you'll have the chance to visit with some of today's leading intranet manufacturers in our Technology Display Area. For more information about this conference, visit our Events Calendar under Professional Services on our homepage at www.computerworld.com, or call our registration hotline at (800) 340-2366. (Sorry this conference is for CIO's and senior IT management only.)



COMPUTERWORLD intranet '97

Monday, June 23 -
Wednesday, June 25, 1997

In more than 30, CIO-presented, in-depth sessions, you'll hear successful implementation strategies, case histories and an extensive view of intranet technologies, including:

- How the TWS Net Intranet Keeps CSX Customers Informed
- Using Web Technology to Extend Service Offerings at SABRE: A CIO Perspective
- Process and Environment for Intranet Applications Development
- What Parts Do Intranets Play in the Total IS Picture?
- Making 100,000 Better Places to Work and Stay
- Managing the Migration to Intranets
- Using Intranets/Extranets to Drive the Business: Snap-on's Electronic Commerce Model
- Silicon Junction: The Web as the Standard Application Platform
- Putting Groupware to Work at Netscape
- What's the Future of the Intranet?
- The Evolution of Network Computing at IBM
- Integrating the Electronic Channel with Existing Distribution Channels
- Developing IS and End-User Skills
- Putting the Publishing Model to Work on the Intranet
- Facilitating Collaboration Across Divergent Platforms
- And More!

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

Sponsors as of April 28, 1997

Novell®

MCI

For more information, call our registration hotline at (800) 340-2366.

If you're like our engineers, we know
you'll trade in your old printers for the sheer
thrill of experiencing the latest technology.

For everyone else, we've got cash.

If you've been thinking about upgrading (and increased speed, efficiency and technological advances alone aren't enough to get you motivated), we may have something for you. Our Cash In & Trade Up program lets you send in practically any old working printer for cash or credit towards a new HP LaserJet or DeskJet 1600C printer. You can even trade in your old print server for credit towards a new HP JetDirect print server. To find out more, contact your local reseller or call 1-800-TRADE ME, or log on at www.hp.com/info/tradeup. **Built by engineers. Used by normal people.**



HEWLETT
PACKARD

Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

Do you expect to upgrade hardware for more than half the users moving to Office 97?



Based 120 organizations that plan to upgrade to Microsoft Office 97
Source: Computerworld survey

Small player fills big storage need

► Import brokerage uses Zitel arrays to ease bottleneck

By Tim Ouellette

Fritz COS. had a big storage problem when it moved its mainframe accounting applications to Unix servers.

But it took a relatively small player in the storage market to solve the problem quickly.

The San Francisco-based import brokerage found that after it moved off a Unisys Corp. mainframe to Hewlett-Packard

Co.'s HP 9000 servers, accounting reports took longer to process.

It turned out the Unix server's processing was fine, but the I/O connection to the Unix disk storage device was creating a huge bottleneck. That left the processors idle while they waited for actions to be completed, said Jim Hedlund, accounting software manager at Fritz.

Users needed those reports for monthly planning meetings but weren't getting them, until halfway into the next month.

Hedlund and his staff tried adding more Unix processes

and system memory to open the data pipe to the disk array, but to no avail. When they went looking for answers, major storage vendors could provide only limited, expensive options that didn't fit Fritz's plan or budget.

But a company called Zitel Corp. in Fremont, Calif., offered to let Fritz test its CASD-II/Enterprise caching disk arrays for free.

The CASD-II line let Fritz add small increments of inexpensive

data storage rather than large, expensive systems.

And when Fritz performed a trial of the Zitel device in parallel with its existing HP storage system—without doing anything else to the server or network—report-processing time was cut by so much

that users thought something Zitel, page 44

These caching storage boxes hit the Unix I/O problem right in the head

NT scaling race heats up

SCALING UP NT SERVERS

	Data General Avilion AV 6600	Unisys Aquesta XR/6
Processors	Up to six 200-MHz Pentium Pros	Up to 10 200-MHz Pentium Pros
Memory capacity	4G bytes	8G bytes
Storage	No disk on base models	Up to 52G bytes internal
Price	Less than \$70,000 for six-processor system	\$62,730 for two-processor system

By Jai Kumar Vijayan

UNISYS CORP. and Data General Corp. are bolstering their server lines with systems that bring new levels of scalability to the Microsoft Corp. Windows NT space.

Unisys this week will unveil a 10-CPU system, capable of supporting up to 8G bytes of memory and 52G bytes of storage. DG meanwhile, recently announced a six-processor server that can be clustered to support up to 11 CPUs. Both servers, due next month, are based on Intel Corp.'s 486-MHz Pentium Pro chip and are positioned as high-availability systems for database and online transaction processor applications.

Unisys and DG are the latest in a growing list of second-tier vendors attempting to carve a

market niche by being among the first to offer highly scalable Windows NT servers. Others include Advanced Logic Research in Irvine, Calif., and Axil Computer Inc. in Santa Clara, Calif.

NT systems from vendors such as Compaq Computer Corp. top out at four CPUs, but Compaq is rumored to be announcing an eight-processor server soon.

"From what we have seen of these boxes so far, they seem capable of handling a pretty good [application] volume load," said Russell Tate, a senior software specialist at American Express Travel Related Services Co. in Phoenix.

Amercan currently uses a quad-processor Unisys Aquesta NT server that supports 350 file servers via a wide-area network.

Apart from the increased scalability, the new servers also include features aimed at bolstering reliability and availability (see chart).

For example, Unisys and DG offer redundant power supplies and automatic recovery from CPU, disk and memory failure. Also standard on the two systems are hot-pluggable disks and power and cooling systems.

DG's newest servers also support its cluster-in-a-box capability, which lets users tie two six-processor systems together in one 12-processor configuration within the same system enclosure. The increased scalability should allow users to grow their applications or mount large database and enterprise applications on NT servers.

But it will be a while before users can harness the full horsepower offered by these systems, because neither Windows NT Server nor applications that run under it are optimized to support more than four processors (CW, April 28).

"Hardware vendors are taking a number of strategies to somehow increase availability and scalability of their servers as Windows NT moves from the workgroup to the enterprise," said Jerry Sheridan, an analyst at Datquest in San Jose, Calif.

"But they are not going to be very successful until NT is ready" to support more than four processors, said Laurie McCabe, an analyst at Summit Strategies Inc. in Boston. ■

Nokia plans cellular PDA devices

Nokia Telecommunications Corp. will launch its combined mobile cellular telephone and personal digital assistant, the Nokia 9000 Communicator, in the U.S. by the end of the third quarter.

Nokia, in Irving, Texas, also unveiled at the recent Hand-held Systems Conference its Smart Messaging technology. It will enable Internet access from standard Global System for Mobile Communications (GSM) cellular phones with Short Messaging Service (SMS). Availability dates weren't announced. Pricing will be decided by network operators.

SMS can handle only six characters, which limits its capabilities, said James McAtamney, wireless technology consultant at Stanford Research Institute Consulting in Menlo Park, Calif.

The Nokia group also unveiled and received Internet mail and browser. A beta version of the World Wide Web, it was launched in Europe last year but couldn't be rolled out in the U.S. until a GSM network was in place.

—Mimi McGee, IDC News Service

NEW PRODUCTS

TELETYPE TECHNOLOGY, INC. has announced the Model 8333 RS-232C-to-RS-485 interface converter.

According to the Greenlawn, N.Y., company, the converter allows information exchange in full-duplex mode over two twisted-pair wires. The converter is a 1.5-in. x 8-in. attached module that includes an internal power supply.

It costs \$460.
Telsys Technology
(914) 491-9991
www.telsys.com

HYPERTECH INFORMATION SYSTEMS, INC. has announced the CD260R, a CD-Romable drive for overwriting data on CD-Rewritable discs.

According to the Bedford, Nova Scotia, company, the



CD260R

drive allows double-speed recording of CD-Rewritable and traditional CD-Recordable disks and six-speed reading of those disks and CD-ROMs.

Pricing starts at \$799.
Dynamtek Automation Systems
(904) 594-9999
www.dynamtek.com

TEKTRONIX, INC. has announced Spotlight Network VideoServer System for providing full-screen, full-motion video on demand to individual desktops connected to client/server networks.

According to the Broomfield, Colo., company, the system delivers MPEG-1 video that requires as little as 400K bit/sec. of network bandwidth. A server is a combination of video and normal data traffic. A network video encoder and browser plug-in are provided.

Pricing starts at \$65,000 for a 30-station system with plug-in and an encoder.

VideoServer
(970) 687-4779
www.tek.com

STORAGE ENGINEERING has announced SuperFlex DDS-3 Type A1235, for backup capacities of up to 16GB bytes using digital audio tape drives.

According to the Milpitas, Calif., company, drives in the array provide twice the speed and three times the capacity of previous drives at half the cost per gigabyte.

The four-drive array costs \$13,000.

Storage Dimensions
(949) 954-4796
www.storageengineering.com

MONITORWORK SYSTEMS, INC. has announced TouchTek Premier, a line of resistive touch screens.

According to the Methuen, Mass., company, the new touch screens are ideal for environments that require durability and where input might come from gloved hands, pens, fingernails or credit cards. Touches are accurate more than 99% of the time, according to the company.

A 10.4-in. touch-screen kit

costs \$355.
MonitorTouch Systems
(949) 699-9000
www.monitortouch.com

NETEL CORP. has announced the Intel Supertek 10/100 Shockable Hub, which can operate at either 10M or 100M bit/sec. It was designed for customers making the transition to 100M bit/sec. technology.

A 13-port model costs

\$12,355.
Netel
(908) 264-7294
www.netel.com

ANF ASSOCIATES LTD. has announced the Mini-PCI Ultra-mini PalmSecure Light to evenly illuminate personal displays and keyboards anywhere on machine: personal digital assistants and handheld personal computers.

According to the Merrick, N.Y., company, the light is powered by three AA batteries. Features a push-button power switch and is collapsible. The price is \$34.95.

ANF Associates
(914) 948-3948
www.anf.com/psl

HEWLETT-PACKARD CO. has announced SureStore DLT 4000 digital linear tape-based automated storage libraries for Windows NT Server.



SureStore DLT 4000

According to the Palo Alto, Calif., company, the libraries were designed to back up between 400G and 1,000 Gbytes of data within a two- to eight-hour unattended backup window. Stand-alone and rack-mounted versions are available.

Pricing starts at \$24,995.

Price/performance
(970) 999-0900
www.hp.com

THE WEB AND X. TOGETHER AT LAST.

Our NEW Chameleon™ UNILink 97 is the first PC-to-UNIX connectivity solution to unite an X-Server and your Web browser. Which means centralized administration, remote configuration, and access to UNIX applications can now happen the easy way — over the Web. Add our high-performance NFS and you've got the perfect union of Windows, Web and UNIX. Call or visit our Website for a free download.



NETMANAGE
Complete PC Connectivity Solutions

800.342.7525
www.netmanage.com/webx/

Hitachi plans rewritable DVD

By Terko Uimonen

HITACHI LTD. officials last week said the company will start sampling rewritable digital video discs (DVD) drives for PCs on June 20.

The DVD-RAM drives in Hitachi's GF-1000 family will offer high reliability in both reading and writing data to the disks, according to the Tokyo company.

The GF-1000 drive is an internal model that has the Advanced Technology Attachment Packet Interface between a PC and a CD-ROM drive. It weighs 2.3 pounds and measures about 5.75 by 8 by 1.5 in. It will start sampling in July at a price of \$794, Hitachi officials said.

The GF-1050 is identical in size, has a

SCSI interface and will be available next month at the same price.

The GF-1055 is an external DVD-RAM drive with a SCSI interface. It will weigh 2.5 kg and measure 22.1 by 27.5 by 65 mm. It will be available next month for \$953, Hitachi officials said. The DVD-RAM disks will offer maximum storage capacity of 5.2 Gbytes, equal to about 3,600 floppy disks, when using both sides of a 5-in. disk, the officials said.

The officials said Hitachi expects the worldwide market for DVD drives to reach 70 million units by 2000, including 30 million DVD-RAM drives. □

Uimonen writes for the *ITG News Service* in Taipei, Taiwan.

Zitel

CONTINUED FROM PAGE 43

was wrong with the disk arrays.

"My primary concern [moving off the mainframe] was the gap on Unix for its I/O deficiencies," Hedlund said. "But I think these caching storage boxes hit the Unix problem right in the head."

For example, the monthly asset report, which had taken up to three hours, was turned around in 45 minutes. And a 20-hour report-consolidation program took only four hours to complete with the Zitel storage attached.

"Now we are back to the time frames we experienced on the mainframe," Hedlund said.

Zitel is just beginning to address the Unix market directly, after relying for years on OEM sales to IBM for inclusion in IBM's mainframe storage devices.

But Zitel's move from mainframe to Unix storage has gone smoothly, one analyst said.

"Zitel changed the microcode from their mainframe box, so customers lose nothing in terms of mainframe-style availability, reliability and performance when moving to the Unix world," said Tom Lalive, an analyst at International Data Corp. in Framingham, Mass. □

The World's Fastest Networked CD-ROMs From Procom Technology Just Got Faster.

Procom
name
solution
fast
of CD-
data

Comparative CD-ROM Transfer Rates

- Fast
- 100
- Choose from configurations
- Cost-effective, NTAS,
- UNIS
- High-redundant power
- supply

...nices
.../sec.
...faster
...today.
...-ROM
...
...-
...ment
...w
...who
...of
...
...arrays.

**NETWORLD
+INTEROP**

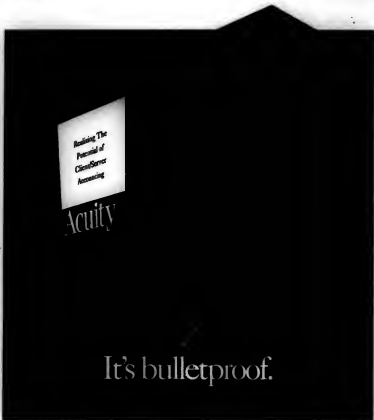
LVCC South Hall
Booth #355



PROCOM TECHNOLOGY INC.
2181 Dugout Drive, Irvine, CA 92612
Tel: 800 800 8600 or 714 852 1000 ext. 414
Fax: 714 261 7280
<http://www.procom.com>
Email: info@procom.com



When the dust settled at Microsoft's BackOffice shoot-out, the experts all agreed.



Recently, the big guns in accounting software fought it out at Microsoft's® BackOffice™ Challenge.

And when it was all over, the judges agreed: Acuity Financials™ integrates better with Microsoft technology than other client/server accounting applications.

That's good news for CFOs and controllers interested in a system that can perform the complex tasks they need. And it's equally important for CIOs and technical staffs, who need seamless integration with minimal service costs.

Since it was built from the ground up exclusively for a Microsoft environment, Acuity works flawlessly with all Microsoft Office and BackOffice applications. Customizing it to precise user needs is

extraordinarily easy. And along with guaranteed Year-2000 compliance, it's ready for both the Internet and the intranet.

Plus, because Acuity is backed by more than a decade of accounting software experience, you can be sure of a safe, reliable investment.

For more information, or to receive our white paper series, visit our Web site at www.sota.com, or call 1-888-4-ACUITY.

Because when it comes to ease of integration, the Microsoft BackOffice Challenge shoot-out proved one thing for sure.

We're right on target.

©1997 State Of The Art, Inc. Acuity Financials and State Of The Art are trademarks or registered trademarks of State Of The Art, Inc. All other product names are trademarks of their respective companies.

Designed for



Microsoft
BackOffice



STATE OF THE ART

ACCOUNTING SOFTWARE

Strength in numbers.

Software

Client/Server • Development • Operating Systems

Briefs

One-third of the users surveyed are running Office 97...

Which version of Office are you currently using?

Office 97	35%
Office 95	60%
Office 4.0	23%
Other	2%

Base: 150 users of various Office versions

...and most of them bought it off the shelf.

Did you get Office 97 bundled, or did you purchase the upgrade?

Bundled	25%
Purchased	73%
Don't know	2%

Base: 53 Office 97 users

Source: Computerworld survey

Storage software

Storage Software, Inc. in Sacramento, Calif., has announced SAM2-Vantage for MVS 3.4, storage management software for mainframe data centers. Version 3.4 adds QD Plus, an I/O performance monitor that works across RAID and conventional disk storage systems. Version 3.4 also features additional graphical capabilities, reporting functions and a tape-to-tape distribution module. SAM2-Vantage 3.4 is available from Professional Software.

Archival for NT

Adabas Systems, Inc. in San Jose, Calif., has announced Adabas Archivist Capture 3.0 software for Windows NT. The software was designed to replace the cost and time associated with distributing and accessing paper-based information. Users can convert many documents into an electronic format that can be distributed and managed on corporate networks and the World Wide Web. Pricing starts at \$495 for the ability to convert up to 10,000 pages in one session.

Pace of change stymies coders

By Sharon Gordon

SO MUCH FOR technological advances speeding new applications to workers. Developers and information systems managers are so flooded with new languages, tools and platform choices that they have a hard time getting any work done, according to Howard Rubin, a Meta Group, Inc. research fellow.

Software development productivity was down 50% in 1996 (see chart), according to an annual study by Stamford, Conn.-based Meta Group. The firm didn't release the base number of applications involved in each annual comparison.

"People are trying to assimilate all this stuff, and it's just too

much," Rubin said. "They're spending so much more time making decisions they never had to make before. Which language do they use? Which platform do they write it for?"

INCREASED WORKLOAD

The impact is substantial, said Tom Obrey, chief operating officer at FoodMedia, Inc., a cross-platform interactive media company in Portsmouth, N.H.

Obrey said he is so swamped with new technology and decisions that compared with two years ago, he and his developers have to do two to three times more work to build an application.

Obrey said large projects require compatibility across multiple computing platforms and

DROPPING DEVELOPMENT

According to a recent survey, the number of applications built for users is beginning to take a dip.

1991 to 1992	6% rise
1992 to 1993	6% rise
1993 to 1994	6% rise
1994 to 1995	10% drop
1995 to 1996	50% drop

Source: EDCI computerworld.com

Source: Meta Group, Inc., Stamford, Conn.

World Wide Web browsers. "It takes a lot more research, a lot more testing and a lot more debugging. We have to do all of that on one platform or for one browser, and then do it all again," he said.

Adding a browser means extending application development time by up to one-fifth, Obrey said.

"We could be building more Pace of change, page 49

GIS SYSTEMS

MapInfo charts new tools path

By April Jacobs

MAPINFO CORP. is integrating its geographic information system (GIS) software with popular business productivity tools to expand its market beyond government agencies and utilities.

The Troy, N.Y.-based company plans to introduce new versions of its MapXtreme, MapMarker and SpatialWare tools this month that will integrate tightly with Oracle Corp.'s databases, Lotus Development Corp.'s Notes software and Microsoft Corp.'s application development tools Visual C++ and Visual Basic.

MORE MAINSTREAM

That strategy should help MapInfo break in to the mainstream business user environment, according to Henry Morris, an analyst at Framingham, Mass.

Large government entities and utilities, such as telecommunications companies, make up MapInfo's traditional user base, according to Morris. MapInfo competes with Redlands, Calif.-based Environmental Systems Research Institute.

MapInfo, page 49

ACI US bundles database development kit

► 4D Desktop targets Mac OS, Windows NT

By Lisa Piccinelli

ACI US, INC. last week began shipping 4D Desktop, its web-based database development tool kit that bundles the latest 32-bit versions of ACI's 4th Dimension relational database, compiler and code management application.

The \$499 product, which is aimed at professional and corporate developers, runs on Windows NT and the Mac OS oper-

ations maintain "applications and reuse code."

4D Insider provides a point-and-click, drag-and-drop code servicing system that examines database objects and their dependencies and lets component builders and users modularize or merge existing applications.

Those capabilities potentially help users develop applications on one platform — Mac OS or NT — and compile the code to run on either type of client or server.

4D Insider also provides a dictionary of global search-and-replace capabilities within an entire application, cross-referencing and documentation tools, and easy localization of applications into different languages.

UPDATED LOOK

One user applauded the 4D database enhancements, saying they "are great for cross-platform development."

"They give the applications a more modern look. Now it only

takes one object to create something when it used to take seven to create the same object," said a scientist at a large West Coast biotechnology firm who asked not to be identified.

Version 6 of the 4D Compiler generates a compiled version of an application and controls code quality by displaying clear messages including method name, line and column error descriptions. □

Snapshot

Electronic Imaging alerts

1995 U.S. electronic imaging revenues — \$2.4B
1996 U.S. electronic imaging revenues — \$3B

6% of installed systems in 1996 were Windows NT-based clients

30% of imaging clients in 1997 will run Windows NT

50% of current installed servers are running on Windows NT, with 30% expected to do so by 1997

*Estimated
Source: EDCI survey

Source: EDCI Information Group, Cambridge, Mass.

LAWSON

Software

The good news about our
Web-deployable software is that you can
set up an office anywhere.



(The bad news is, we mean anywhere.)

Lawson Software, the Web Enterprise Company, makes networking new locations and remote or mobile employees as simple as adding browser software. End users of LAWSON INSIGHT™ Business Management System will have instantaneous access to our world-class financials, human resources, procurement and supply chain process suites without sacrificing functionality. Add to LAWSON INSIGHT the power of an IBM RS/6000 and you've got a total solution that

can give you a real business advantage. That's because the RS/6000 is scalable, allowing your INSIGHT solution to grow as you do. Additionally, the flexibility of the RS/6000 ensures that it can easily integrate into your existing enterprise. And Lawson Software's open licensing is an appealing solution for migrating large companies through future technological changes and upgrades without additional licensing fees. LAWSON INSIGHT. *Because the future can't wait.*

Oracle bypasses third-party add-ins

By Randy Weston

ORACLE CORP. is incorporating into its application package some features that in the past third-party vendors provided.

Oracle last week announced that the newest release of its application package, Oracle Applications 10.7, will include a workflow engine and new supply-chain management applications.

Many of the enterprise resource planning vendors rely on third parties to supply such functionality. For example,

PeopleSoft, Inc. called on BEA Systems, Inc. and its Tuxedo middleware to handle workflow.

The workflow engine incorporates a company's policy and procedures into the applications so users will be alerted if they stray, or the users can query the correct way to carry out a task.

As for the supply-chain piece, Oracle announced it is incorporating supply-chain planning, supplier scheduling and a product configurator into its package. Until now, Oracle has partnered with

companies such as Manugistics, Inc. in Rockville, Md., to provide much of that functionality to its customers.

BROAD TARGET

Company officials said the new piece is meant to give some basic supply-chain functions to a broad range of users. But many companies in industries such as consumer packaged goods will still need the more robust and feature-rich offerings from companies such as Manugistics.

The planning piece allows users to generate distribution requirement plans, multipoint master schedules and material requirement plans.

The scheduler automates the order management process between a company and its suppliers. And the product configurator is designed to verify that a customer's requested product can be made.

Also, Oracle is releasing a project manufacturing application designed for controlling manufacturing projects and prototype development on large projects. It is targeted at industries such as engineering contractors, defense contractors and custom manufacturers. □

MapInfo

CONTINUED FROM PAGE A7

Inc. in the GIS market.

The business case for adopting tools such as MapX or SpatialWare is the ability to see trends and analyze information in a more detailed way than before. Morris said. For example, the data from a marketing analysis report can have a spatial layer that can help find new or emerging markets.

MapX allows users to "geo-code" data, giving it a spatial characteristic. That data can then be used to produce a map of all data points. SpatialWare allows that data to be embedded into a database so it can be called up to a way that allows it to be mapped.

BellSouth Mobility DCS, a division of BellSouth Corp. in Atlanta, is using MapX Version 1.0 to track its wireless communications customers because they are serviced based on the area in which they live.

Bruce Winters, manager of technical operations at BellSouth Mobility DCS, said improvements to MapX, particularly

MAP MAKERS

MapInfo's MapX 2.0, SpatialWare 2.0 and MapMarker 2.0.

- **Integrate with Visual Basic, Visual C++**
- **Access Notes and Oracle databases**
- **Starting price: \$4,960, which includes a \$1,000 developer license fee; additional seats can be purchased for \$99 each.**

database integration, will help his business run more smoothly.

For example, when a customer changes its address, Winters said, BellSouth Mobility DCS can set up "a trigger" between MapX and the Oracle database to automatically change in service.

"With the back end set up the way we have to do it right now, [the customer] data can't be accessed by a lot of people," Winters said. □

Pace of change stymies coders

CONTINUED FROM PAGE A7

applications faster and making more money" if there were fewer application porting issues to deal with, Moris said.

Inexperience is another issue driving the productivity slowdown at Roseland, N.J.-based Prudential Insurance Company of America, applications architect Carl Thune said.

The flood of products and platforms constitutes a "whole [new] series of complexities to contend with, and we're not used to making these decisions," Thune said.

There is also the matter of a larger learning curve for developers. "The days of using one language to build an implementation are over," Thune said. "Our people

have to know several languages. There's a lot more training and time [involved] to learn all the different tools and languages we need."

PRODUCTIVITY PICKUP

Rubin noted these steps that managers can take to pick up that productivity level:

- **Focus more on standardizing the development process, when that is possible.**
- **Have developers learn new languages and tools before they begin a project, instead of during the build phase.**
- **Adopt a new technology only when it makes business sense. Don't take on something new just to be cutting-edge.** □

Development demand for coders is up 25% this year while software development spending is up only 3%, according to Meta-Group.

NEW PRODUCTS

I-MAGIX, INC. has announced Rhapody, an object-oriented analysis, design and implementation tool.

According to the Andover, Mass., company, Rhapody uses the Unified Modeling Language standard to produce full production code at the click of a mouse. A code generator provides full C++ production-quality code from object models. An animation program highlights the actual operation of a design for visual debugging.

Pricing starts at \$2,495.

I-Logic
(508) 684-1100
www.ilogic.com

INFOCAPS, INC. has announced Fresco, a group of software and hardware products for deploying live Java database applications over networks.

According to the San Francisco company, the products include Fresco De-

signer, a Java/database rapid application development tool; Fresco Information Server, an intranet application server; and Fresco Adapters, a set of adapters that connect to databases.

Pricing starts at \$4,950.

InfoCaps
(415) 443-9050
www.infocaps.com

LOOK SOFTWARE INC. has announced LookWin, a graphics development tool for Windows.

According to the Los Altos, Calif., company, LookWin provides prebuilt objects that can be integrated with other standard tools. It was designed for building interactive graphics with the LookMaker editor and the LookLib, a C programming library. It costs \$4,950.

Look Software
(415) 909-0945
www.look.com

Which database is the lifeblood of 15 of the top 16 US hospitals?

Based on U.S. News and World Report, America's Best Hospitals



FOR YOUR INFORMATION, IT'S OPEN M.

For more information, check our web site at www.interpre.com/enr or call 817.521.0600, Dept. CM

Open M is a trademark of Manugistics Corporation. Copyright © 1997 Manugistics Corporation.

Hidden somewhere
in a vast database is exactly
the information you need.

How easily can you find it?



In a world of new applications, disparate platforms and distributed operations, finding the information you need is — at best — a daunting task. Until you discover what StorageTek® can do for you. Our disk and tape technologies cross operating systems seamlessly to deliver the information you need, when you need it. Now and as your business grows. Call us today at 1 800 STOR-TEK to find out more. Or visit us on the Web. Because the first step to finding your information is finding the company that can store it for you.

www.storage.com/usa

The Enterprise Network

LANs • WANs • Network Management

Briefs



Beth Israel's J. P. Scarisbrick: "We have to offer doctors more and better services than other hospitals"

Spinal tap heals hospital

► Backbone technology delivers competitive edge

By Bob Wallace

BETH ISRAEL Medical Center realized long ago that if it were to succeed in the ferociously competitive deregulated health care industry, it would have to lead its own network.

To better compete for patients and doctors, the New York hospital had ambitious plans to network its radiology system, build a LAN-based medical-imaging system and connect a lab in which robots process tests.

Technology, in short, was the key to the medical center's survival.

"The competition is unbelievably intense, and it's for patients and physicians," said J. P. Scar-

isbrick, director of the information technology and services department. "And we recruit top doctors, just like major league sports go after star players. Technology plays a huge role in all this. We have to offer doctors more and better services than other hospitals."

OUT OF ROOM

But the network on which all that development would depend was short of bandwidth and up only 70% of the time.

"We had outgrown our network to the point where a faulty printer or losing a hub brought the entire network down," recalled Sidney Gelfin, asso-

ciate hospital, page 57

Tools aim for answers in sea of data

► Management apps offer real-time displays, problem solving

By Patrick Dryden

TWO INNOVATIVE management tools designed to identify problems buried in reams of opaque performance data are set to ship this week. The first tool displays in real time the cost of networking problems; the second models the relationships among devices and applications to quickly identify the source of problems.

PROBLEM IDENTIFICATION

The tools were designed to help understaffed and overloaded managers quickly identify and eliminate problems in complex environments so the problems won't affect business processes.

ProtoCop, from internetworking vendor Optical Data Systems, Inc. (ODS) in Richardson, Texas, displays problems across a network in real time.

And it interprets technical problems such as backbone congestion in business terms —

showing productivity dollars lost, for example. To augment security tools, ProtoCop also can reveal possible intruders.

"ProtoCop may not revolutionize how we do business, but it comes close," said beta tester Jack Brown, chief engineer in operations and support at the

Internal Revenue Service. It turns inter-networking data into quality-of-service information useful to both managers and technicians, he said.

"Our managers need to focus on the million-dollar questions, not the hundred-dollar questions," Brown said.

ProtoCop gathers statistics from agents using Simple Network Management Protocol (SNMP). Remote Monitoring (Rmon and Rmon 2) and other

sources for analysis in a relational database. Operators get networkwide reports in real time on a Windows 95 or Windows NT station.

The tool's ability to interpret Rmon data to glean information about security is valuable because "you can see who's on

"Our managers need to focus on the million-dollar questions."

— Jack Brown, IRS

the net, where they gained access and what they're doing," said Matthew Kovar, a senior analyst at The Yankee

Group in Boston.

ProtoCop costs \$15,000.

The second tool, InCharge, from start-up System Management Arts, Inc. (Smart) in White Plains, N.Y., steps beyond the abilities of event-correlation engines that filter alarms to identify problems.

Management tools, page 57



IBM's Mike Laurie

IBM division head targets 'net, Java

By Laura DiDio

Mike Laurie, the new general manager of IBM's Personal Software Products division, jokes that his travel schedule in his first 120 days on the job has been so hectic and varied, he's been on every continent except Antarctica.

When he assumed the post, the 20-year IBM veteran took responsibility for the direction of OS/2 and keeping what has been an extremely loyal user base happy in the face of competition from

Laurie, page 54

Access concentrators take voice, data and video from a campus LAN and funnel it into a WAN

1996 worldwide access concentrator revenue: \$29.1M



Source: DataWorld Group, Portland, Maine, Calif.



THE OTHER IS HIS WINDOWS NT® SERVER.

When Swiss bankers make Internet transactions, they do it on a Tandem® Windows NT Server-based system. And they do it with the security that Tandem brings in handling 90% of the world's stock transactions, 80% of all ATM transactions, 66% of all credit card validations, and two-thirds of all 911 calls in the United States. Tandem's cost-effective solutions for modular growth in the areas of finance, retail, telecommunications, insurance and elsewhere now bring business-critical reliability to every customer, for every transaction they make. Contact us at www.tandem.com for more information. Or call 1-800-NONSTOP, ext. 8003 to receive our latest information pack which includes the new Windows NT Enterprise Management Sampler CD.

Every second, every transaction, every customer counts.



IBM's Lawrie comes clean about future of OS/2

CONTINUED FROM PAGE 31

Microsoft Corp.'s Windows NT at both the client and server level. In an interview with Computerworld, Lawrie talked about focusing the division's energy on selling OS/2 Warp and OS/2 Warp Server as platforms for electronic commerce applications written in Java.

CW: What's the strategic goal of the Personal Software Products division?

Mike Lawrie: All of our new initiatives center on helping IBM customers exploit the networking business model spawned by the Internet and Java.

We've announced a framework for network computing and electronic commerce servers centered around our Lotus Notes Domino and DB2 databases and transaction servers.

"We have seen some erosion of OS/2 Warp.... but most of our OS/2 Version 4 customers are sticking with the platform." — Mike Lawrie

CW: What is the status of IBM's OS/2 Warp and OS/2 Warp Server development efforts?

Lawrie: We're positioning them as transition vehicles from LANs to an operating system-independent network computing model running 100% pure Java applets. We see this as a means of shortening up the installed base and garnering new customers.

It's currently very expensive to convert an OS/2 application to a Windows NT application. And it's not a simple port. Our message is: If you're going to spend the money to move to a new application model, migrate to Java. It will run on any [operating system] and provide flexibility.

CW: With all the talk about Windows NT's momentum — particularly on the server side — what's OS/2's market share?

Lawrie: I haven't seen a lot of erosion at the OS/2 Warp Server base — we're holding steady at about 15% of the installed base, according to International Data Corp. We have seen some erosion of OS/2 Warp, especially in the older 2.x version. However, most of our OS/2 Warp Version 4 customers are sticking with the platform.

CW: Do you have plans to add clustering capabilities to OS/2 Warp Server?

Lawrie: We did announce symmetric multiprocessing — some of that technology is available today.

There is additional clustering technology we could add to Warp Server right now simply by making some changes to the file system, but we haven't made a decision yet.

CW: Why not?

Lawrie: Why take on the additional development expense if the customers

aren't screaming for it. They want other things first — like Java, better TCP/IP and support for [Lightweight Directory Access Protocol].

CW: IBM is noticeably late with LDAP sup-

port. When can we expect it and other key items such as a proxy server and an electronic commerce server?

Lawrie: LDAP support is due out in the fourth quarter; native TCP/IP support will ship in the third quarter.

We haven't set a date to release our proxy server, but our Network Computing Division already ships an IBM firewall.

We'll release our Lotus Notes Domino Merchant [this week].

We'll also ship OS/2 Warp Server support for Windows 95 and Windows NT Workstation desktops this quarter along with Point-to-Point Protocol support. □

AUSPEX
SERVERS



NEW PRODUCTS

AMDAHL CORP. has announced Transparent Data Migration Facility software, an application that eliminates downtime during data migration in System/390 systems.

According to the Sunnyvale, Calif., company, the software transfers data between any two like-geometry storage devices of appropriate capacity, regardless

of vendor or model. It was designed to give end users uninterrupted access to data and business applications.

Pricing starts at \$60,000.

Amdahl
(408) 746-6000
www.amdahl.com

I-KINETICS, INC. has announced Open

JDBC, a Java Database Connectivity (JDBC) driver that connects via the Internet to DataBroker 5.0 servers for multi-database access.

According to the Burlington, Mass., company, OpenJDBC uses the open standards of the Internet InterOrb Protocol and I-Kinetics' DataBroker, a multi-threaded Common Object Request Bro-

ker Architecture (CORBA) server.

The product was designed to provide easy integration with current and future CORBA services.

OpenJDBC costs \$4,995.
Interim
(800) 454-6959
www.i-knetics.com

RACAL DATA GROUP has announced the WINstream ISDN Modem, a desktop device for 128K bit/sec. access to Integrated Services Digital Network (ISDN) services with an encrypted challenge/response security system.

According to the Sunrise, Fla., company, the modem is available for data and voice or data only. Security is provided by the Challenge Handshake Authentication Protocol.

The modem also supports the Password Authentication Protocol.

Pricing starts at \$359.
Racal Data Group
(954) 846-1601
www.racal.com/rdg/index.htm

GEMSTONE SYSTEMS, INC. has announced GemStone/J, an enterprise-class Java object application server for building and deploying large Java applications using three-tier intranet technology.

According to the Beaverton, Ore., company, GemStone/J includes a transactional Java Virtual Machine, a shared object manager and a repository for enabling Java applications involving several hundred million Java objects and thousands of users making transactions.

Pricing starts at \$4,995.
Gemstone Systems
(503) 533-9000
www.gemstone.com

IMATION CORP. has announced Imation Media Performance Manager, software that allows data center workers to monitor and manage media and data storage drive performance from the desktop in real time.

According to the Oskdale, Minn., company, the software works in client/server systems to monitor stand-alone and automated tape libraries for information on drive and tape performance. A history of tape and drive performance can be accumulated to analyze performance.

Pricing starts at about \$45,000.
Imation
(612) 704-4000
www.imation.com

RHODE ISLAND SOFT SYSTEMS has announced ICL Builder, a program for managing and manipulating icon libraries within Windows 95 systems.

According to the Woonsocket, R.I., company, ICL Builder is a 32-bit program that uses Windows 95 to create icons from bit maps, convert icons to bit maps and assemble and disassemble Windows icon libraries.

ICL Builder costs \$19.95.
Rhode Island Soft Systems
(401) 767-3046
www.rissoftsystems.com

Some People Think of Us Each Day the Sun Goes Down.

For others, everyday is a good day with 99.986% uptime.

What's certainly worth to you? If your job is to manage, protect and deliver life-giving data and information to the world, it's worth everything. Because the world never stops working. Ever. Continuous data access is the guarantee thrown down at

your feet on a daily basis. It's also the real-world benchmark an Auspex server thrives on.

It fundamentally works because it's fundamentally different.

Auspex network data servers are unlike any other server on the market. As scalable as they are powerful, Auspex NetServers are designed from the ground up to optimize data flow. Our patented architecture enables major system functions—network protocols, file systems and storage—so

work independently of the operating system. By centering your data on an Auspex server, blinding speed and eye-opening reliability are not mutually exclusive.

We're not just blowing sunshine.
Find out why the most competitive businesses in the most demanding industries continue to define Auspex as the data server of choice. Join us

for the story at our web site at www.auspex.com, or call us at

800-735-3177.

The way we see it, it looks to be just the start of another wonderful day.

Our unique architecture enables major functions—network protocols, file systems and storage—to operate independently of the OS for increased availability, performance and ease of administration.

And with thousands of Auspex NetServers managing hundreds of terabytes of data worldwide, our proven uptime continues to be 99.986%.



AUSPEX

THRIVE CAREFULLY



What do you call it when industry leaders give everyone access to killer apps and ideas that map the future of digital document production?

Call it DocuWorld.

There has never been anything like DocuWorld. It begins May 13 and 14 in cities around the world. It's a live and virtual event where 12,000 people will see killer applications, new products, emerging technologies and end-to-end solutions from Xerox and other leaders of the digital document revolution. It's the latest word in efficient and effective document

production. DocuWorld is also a continuing community on the Internet. It's where customers and companies can explore new solutions together. Discover new opportunities. And map out the frontiers of digital document production. If you want to register for DocuWorld, just visit our Web site at www.docuworld.com. Or give us a call at 1-888-DocuWorld.

THE
DOCUMENT
COMPANY

Special Advertising Supplement

White
Paper



DATABASE ASSOCIATES INTERNATIONAL

Managing the Next Generation of Web Applications



COMPUTERWORLD
Custom Publications

New Role
for Object-Relational
Database Management Systems:

Managing Intelligent Web Applications

As the World Wide Web grows exponentially as an application platform, it is also ushering in a new rate of change and to users' insatiable demands for access to information on the Web. As Web applications grow in size and complexity, the need for comprehensive management tools arises. Such tools must be able to manage and maintain Web application content, understand native Web data types, and provide integrated support for the Java development language. The need for Web application management is converging with new database management systems (DBMS) capabilities to create the intelligent Web information manager.

It is increasingly harder to adapt to this rate of change and to users' insatiable demands for access to information on the Web. As Web applications grow in size and complexity, the need for comprehensive management tools arises. Such tools must be able to manage and maintain Web application content, understand native Web data types, and provide integrated support for the Java development language. The need for Web application management is converging with new database management systems (DBMS) capabilities to create the intelligent Web information manager.

This White Paper will define the requirements for an intelligent Web information manager and will describe why this is becoming a role for the object-relational database management system (ORDBMS).

Dr. Robert J. D'Amico, president of Robert J. D'Amico & Associates, Inc., is a database consultant and training specialist at the University of Massachusetts, Amherst. He is also a frequent speaker at industry conferences and seminars.

InformationWeek is a new line from Database Management Systems, Inc. (DBMS) that provides a comprehensive, in-depth analysis on the latest in database technology. InformationWeek is a monthly magazine, InfoDB, product, and a series of books, CD-ROM, and the InfoDB Web site.

InformationWeek is a new line from Database Management Systems, Inc. (DBMS) that provides a comprehensive, in-depth analysis on the latest in database technology. InformationWeek is a monthly magazine, InfoDB, product, and a series of books, CD-ROM, and the InfoDB Web site.

This White Paper is an intelligent Web manager is published by Computerworld Custom Publications. For a report, contact Heidi Brundage at (508) 820-8746 or at heidi.brundage@cw.com. Questions or comments on the White Paper should be forwarded to managing editor Peter Baehner at (508) 820-8746 or at peter.baehner@cw.com.

Realizing the Promise of the Web

The promise of the Web is alluring — an interactive environment providing access to up-to-the-minute information and offering organizations the potential to deliver data tailored to users' individual requirements. The need to deliver the right data in the right format to the right person at the right time applies to intranets and the public Internet.

But for most Web users, reality lags far behind the promise. They are plagued by massive information overload, limited search capabilities, slow performance and the inability to act on the information presented.

Web site managers and application developers face difficulties too. Creating Web applications is easy compared to the efforts of managing increasing volumes of Web content and maintaining performance as the number of users grows.

An intelligent Web information manager is needed to provide support for Web applications in four areas:

1. Storage and management of Web application content, including application logic, in one integrated Web information system. This includes Web pages, documents, spreadsheets, presentations, structured data from RDBMSs and legacy data sources, organization-specific data (e.g., engineering drawings) and multimedia data.

Web information managers don't just store and manage these data types. They also natively understand and can manipulate their content, such as HTML formatting and hyperlinks among Web pages.

The ability to push intelligence about application semantics into a Web information manager reduces the need for application code, resulting in faster application development and deployment, better performance and more flexibility in partitioning applications.

2. Support for dynamic Web content, which involves the abilities

to easily update Web content and to create, on the fly, dynamic Web pages that reflect these updates to the Web database. Web pages are no longer static; each is based on information known about a user or preferences entered by the user.

Example: A corporate intranet enables a customer service rep to retrieve data on any product by pressing a "product" button, which displays a page with the latest product list by category. If the user checks a specific product, the next page delivered to the Web browser contains only information on that product.

Dynamic Web pages and Web content ensure that information delivered to the user meets that user's expectations. And Web content can change without requiring modifications to the application itself.

3. Personalized and subscribe services. These allow each user to define and automatically receive information of interest to them.



It's

Informix Universal Web Architecture

the leading platform for building intelligent web applications

You've heard all about the promises of the web. Now, with the Informix Universal Web Architecture, you can realize them for the first time.

It's the first open Web development and deployment architecture that allows you to create high performance,

intelligent web applications quickly and easily.

What is an intelligent web application? One that lets you

about time your web application developed a mind of its own.

deliver dynamic content that includes the whole spectrum of multimedia like photos and maps as well as documents.

One that lets you individualize the

content for every user, lets them make intelligent queries and get real time responses. One that lets you broadcast content directly to subscribers. All done quickly, easily, and economically.

That's because instead of storing web applications as flat files, the Informix Universal Web Architecture stores the entire application in the database. So you get web applications that are easier to develop, easier to manage and that deliver the high performance you need. Everything from one-on-one customer inquiries to web client server solutions to fully secure internet commerce. In short, if you can imagine it, you can do it.

There's no doubt the web offers enormous potential. But it takes the Informix Universal Web Architecture to let you do something intelligent with it. For more information, call 1-800-688-IFMX, ext. 90.

Or visit our web site at www.informix.com/web



INFORMIX®

Unleashing Business Innovation™

The system monitors changes to the content of the Web information database and delivers new or changed information to each user as appropriate.

Example: An engineering manager receives an e-mail or other notification (pop-up box, ticker tape, etc.) over an intranet whenever a particular design specification is updated.

Publish-and-subscribe (or push computing) reduces information overload and allows Web applications to build on the concept of one-to-one communication by tailoring information delivered to each user.

Integrated query capability: All Web application content. Integrated content searching is the ability to access all types of data in a single query, giving users faster access to the information they want.

Example: An insurance examiner requests all claim forms for accidents at a specified location involving damage to the left bumper and a driver 18 or under.

ROLE OF ORDBMS

One approach to managing Web applications is the object-relational DBMS. A traditional relational database management system (RDBMS) pro-

vides scalability, availability, reliability, transaction management and server-side implementation of integrity and business logic. An ORDBMS adds to these data management capabilities the extensions to support complex business objects in the server — new data types, functions and application logic.

Example: Storing geospatial information as coordinates, allowing the DBMS itself to calculate the distance between any two points. Such native intelligence about new types of data and ways to manipulate the data enriches the DBMS with application-specific semantics. This improves developer productivity by reducing development time and the need to write application code, gives a developer flexibility to determine where application logic should execute, and enhances performance with the option to execute application logic closer to the data.

WEB APPS EVOLVE

In first-generation Web applications, existing information such as marketing collateral is converted to HTML and stored in flat files on a Web server. There is no easy way to tailor this static material; every user receives the same Web page. And all Web content is in operating system files, with the only

facilities for management provided by file-system directories.

Second-generation Web applications add direct access to data stored in an RDBMS using Web-server interfaces, such as Common Gateway

Interface, Netscape NSAPI or Microsoft ISAPI. While this solution gives users more dynamic data, Web application content is still divided into operating system files and database data, making it hard to manage and control Web content as an entity. Nor does the system necessarily scale when content is added and the number of users grows.

Web information managers are the start of a new generation of Web applications. In an ORDBMS, a universal database server manages diverse Web application content and allows users to search through new types of business data, including documents, spreadsheets, presentations, and engineering drawings. It also provides robust data management, high performance through parallel processing, and the ability to push more application semantics into the database itself. The result: a comprehensive Web data environment.

Creating intelligent Web applications involves more than making existing client/server applications Web-accessible (which simply lets users access an application with a Web browser interface instead of a proprietary client interface provided by the development tool). This has certain benefits — it makes the application platform-neutral for deployment and reduces training costs — but does not enhance the application or add user functionality.

In contrast, an intelligent Web information manager provides a platform for not only migrating client/server applications to the Web, but also enhancing them with access to all data across the organization.

INFORMIX-UNIVERSAL WEB ARCHITECTURE

Informix Software addresses all these requirements with its



Universal Web Architecture. This set of components provides intelligent Web application management as well as a framework for building database-enabled Web applications.

These components include:

- INFORMIX[®]-Universal Server and DataBlade modules;
- INFORMIX-Universal Web Connect;
- strategic partners;
- Java Anywhere; and
- INFORMIX-Enterprise Command Center.

INFORMIX-Universal Server is an ORDBMS that can

store and access all types of Web-oriented data and applications. Optional DataBlade modules enable the RDBMS to natively understand the semantics of new application requirements and data types, such as images, text, time series, geospatial, audio and video.

Informix's Web DataBlade module understands HTML pages as a data type and includes tools to develop Web applications using templates called AppPages. (Netscape's Enterprise Web Server is available as an option.)

INFORMIX-Universal Web Connect, the middleware component that connects INFORMIX-Universal Server with the Web server, provides:

- ~ Services such as state management, connection management, load balancing and access control. Publish-and-subscribe capabilities will be available in



the next release.

- ~ Tools such as AppPage Builder, a tool for creating AppPage templates, and Web DB Publisher, a Web report writer.

- ~ A published API used by Web tool vendors to integrate their products with the INFORMIX-Universal Server environment.

INFORMIX-Universal Web Connect allows client/server applications built with INFORMIX-OnLine Dynamic Server™ to move to the Web and provides a migration path to INFORMIX-Universal Server for enhancing them through AppPage Builder. Because INFORMIX-OnLine Dynamic Server does not support DataBlade modules, AppPage Builder takes care of understanding HTML as a data type and creating Web pages with embedded SQL. Current Informix customers can thus build a robust Web information database today.

Informix is working with

partners such as Bluestone, HAH Software, NetDynamics, NetObjects, Netscape and Wallop Software so their tools can transparently create AppPage



tags and Informix SQL statements. Informix is working with these vendors and others to integrate products for Web application development, site management and site conversion into the Informix environment.

When targeting Web applications, tight integration of Java with the database environment is critical; Informix's Java Anywhere family addresses this need. Java is an attractive language for developing Web applications, given its platform independence and ability to execute code anywhere. The

Informix Java API offers direct database connectivity for Java applications.

Informix plans to embed the Java Virtual Machine in INFORMIX-Universal Server to allow developers to write stored procedures and DataBlade modules in Java.

INFORMIX-Enterprise Command Center combines a systems management tool with a Web-browser interface and a central console for managing distributed Web content. It will support INFORMIX-Universal Server soon.

CONCLUSION

ORDBMS products can play a key role in developing intelligent Web applications. The next generation of DBMSs maps well to the requirements of next-generation Web applications. Organizations should begin exploring the benefits of new architectures designed to manage dynamic Web applications and Web content. +

For more information about Informix products and services, please call us at 1-800-688-IFMX, or visit us on the Web at www.informix.com.

Unleashing Business Innovation

Informix Software is leading the next great wave in database innovation to enable the world's leading corporations to manage and grow their businesses. With its focused technology strategy, superior customer service, and best-of-breed partnerships, Informix is the demon-

strated technology leader for corporate computing environments ranging from workgroups to very large OLTP and data warehouse applications — as well as a catalyst in major new IT trends such as dynamic content management, the Web, smart cards, and mobile computing.

©1997 Informix Software, Inc. The following are multiple trademarks of Informix Software, Inc. or its subsidiaries, registered in the United States of America or indicated by "®" and/or in various countries worldwide: INFORMIX®, DataBlade™, and OnLine Dynamic Server™. All other names or marks may be registered trademarks or trademarks of their respective owners.



"because we
want our
customers to
go away,"

and other sound business reasons Travelocity
uses Silicon Graphics WebFORCE servers.



When your Web site connects directly
to the system that books nearly
one-third of the world's electronic
travel reservations, your servers had
better be accommodating. Which is
why SABRE® Interactive
chose Silicon Graphics®
WebFORCE® servers for
their Travelocity™ Web
site. Our WebFORCE
servers combine 64-bit MIPS® RISC
microprocessors with the highest
data throughput in the market. The
revolutionary system architecture, with

industry-leading I/O performance,
lets their Web site handle
anything. And because Silicon
Graphics offers the widest range
of compatible servers, they can
easily scale their site to
handle even more. All
of which means that
Travelocity is getting
a lot of mileage out of
our servers. You can, too. For more
information call 800.636.8184,
Department LS0071 or visit us at
www.sgi.com/Products/WebFORCE.



SiliconGraphics
Computer Systems

See what's possible



© 1997 Silicon Graphics, Inc. All rights reserved. Silicon Graphics, WebFORCE, and the Silicon Graphics logo are registered trademarks. SGI, Origin, Origin200, Origin3000, and WebFORCE logo and box which possible are trademarks of Silicon Graphics, Inc. MIPS and the MIPS logo are registered trademarks of MIPS Technology, Inc. SABRE is a registered service mark and Travelocity is a service mark of The SABRE Group, Inc.

The Internet

The World Wide Web • Intranets • Online Services

Briefs

MAC ATTACKED

Operating system used to hurt the Web

Spring 1996



Base: 1,350 Web users

Winter 1997



Base: 1,052 Web users

Source: International Data Corp., Framingham, Mass., March 1997

Sales force automation

Intelligent Control Corp., in Dallas, has enhanced its Latent Development Corp. Broad-based sales force automation application with improved support for Internet connectivity, sales forecasting, reporting and document scanning. Intelligent Control 4.5 works with Windows 4.1 and 4.5 and can be set up to capture sales leads via the World Wide Web. Pricing for this software, which has a steep learning curve, varies by volume.

Tracking registration

WebSite, a start-up in New York, has announced a service that puts on domain and adds online access capabilities to the Web sites of existing companies. By linking to the WebSite.Net system, technology looking companies can add Internet-based capabilities to their on-site Web sites.

Virus battle spreads to enterprise

By Sharon Machlis and Barb Cole-Gomolski

THE BATTLE against computer viruses is being waged across the enterprise, not just at the desktop.

Antivirus software is often thought of as a client application, but more vendors are offering scanning at multiple points on a network to prevent data destruction and keep staff from having to clean machines that become infected.

Many users said they would

like to deploy virus scanning at the firewall, on electronic-mail servers and on the desktop for the greatest chance of catching a problem early. Steve Cantwell, LAN administrator at AST Computer in Fort Worth, Texas, said checking all three points would be the best way to shut down various entry points for malicious code.

"It makes the most sense if a [virus] scan can occur before a message gets into a user's mailbox," said Ron Rasmussen, vice president at Creative Networks, Inc., a research firm in Palo Alto, Calif. "Ideally, you want this done before it gets to the desktop."

Still, several administrators want to keep desktop scanners to catch problems inadvertently brought in on floppy disks.

At Children's Hospital of the King's Daughters in Norfolk, Va., page 50

OS/2 utilities use the Web

REVIEW ▶ Tools that help you do more in less time

By Esther Schneider

IT MAY BE because Internet access has been built in to IBM OS/2 Warp for a few years that an awesome number of Internet-specific OS/2-based applications are available. With that in mind, I set out to identify and test-drive some "gotta have" utilities for corporate users.

There are dozens of worthy contenders listed at sites such as Hotfiles (hotfiles.mvnu.edu), the OS/2 Must-Have site (www.musthave.com) and BMT Micro (www.bmtmicro.com). But the

four I worked with are good examples of products that take advantage of OS/2's strengths and help you accomplish more in less time. They all take advantage of OS/2's multithreading and multithreading, for instance, so you can download files from several online sites while you correspond with a co-worker at another business site and simultaneously catch up with online discussion groups.

Revolutionary Software, Inc.'s InterCom (www.iwsworld.com/ic/intercom.html) is a beautiful OS/2 utilities, page 62



InterCom's Internet telephone application supports QuickCam video and Caller ID, and its interface is easy to like

Servers slow spoofs, spam



Source: IBM

▶ Message managers aim to control junk E-mail

By Barb Cole-Gomolski

AN EVOLVING crop of Internet mail servers may help information systems shops curb common E-mail abuses such as spamming and spoofing.

Spamming involves bulk mailings of electronic junk mail. Spoofing occurs when a person uses someone else's mail identity for bulk mailings. Either scheme can affect an electronic-mail user, but they can really hurt corporations that have thousands of Internet mail

accounts. Spam can suck up bandwidth, clog mailboxes and force users to upgrade servers and networking gear to account for the overloads.

Messaging managers should control spamming before it invades the corporate network, or they could find themselves upgrading hardware or increasing network bandwidth to support junk mail, said Ray Larcenette, a research director at Garner Group, Inc. in Stamford, Conn.

Internal spamming also is a Spammer, page 60

Tool pushes 'net data, limits surfing

By Mitch Wagner

CARAVELLE, INC. has introduced software designed to make information on the Internet more accessible to users while limiting their access to the 'net itself.

Transcave acts as a proxy server, monitoring selected World Wide Web sites, collecting information as it is updated and distributing it to users across a corporate intranet. In-

formation systems managers can give users access to information on business-related sites and prevent the loss of productivity that can occur when users surf for entertainment.

The product also can broadcast documents across an intranet or the Internet.

The Ottawaw firm's software copies pages on selected Web sites to servers inside the intranet so that users who want to Caravelle, page 60

Virus battle spreads

CONTINUED FROM PAGE 38

Va., about 80% of virus problems come from disks, said James Pierce, manager of technical services at the bureau.

But as E-mail usage increases and more staff members download programs from the Internet, "the best case would be something also scanning everything coming in to our Internet pipe," Pierce said.

Antivirus products that address the enterprise are proliferating. Symantec Corp. in Cupertino, Calif., this week will announce Norton AntiVirus for Firewalls, which will scan for malicious code that might come in via the Internet. The company also plans to introduce virus scanning for Notes and Microsoft Corp.'s Exchange servers in

the third quarter.

The Symantec products would join other products designed for E-mail servers from Cheyenne Software in Roslyn Heights, N.Y.; Dr. Solomon's Software in Burlington, Mass.; McAfee Associates, Inc. in Santa Clara, Calif.; and Trend Micro Devices, Inc. in Cupertino, Calif. Most antivirus vendors also offer network-scanning capability.

"The question is, how much risk does the technical staff want to manage?" said Paul Eklor, an online systems consultant at the Help Desk Institute in Colorado Springs. "If you want no risk, put it on the firewall, on the server, on the desktop and everything in be-



Company

Product

Release date

tween. For me personally, desktop scanning has been sufficient." But Eklor said his network contacts are largely with secure sites.

Experts cautioned that no amount of software can substi-

tute for educating users about security. "We tell users that virus software should not replace good sense here," said Chris Whitman, a member of Ernst & Young's messaging services team in Lyndhurst, N.J.

IGNORANCE NOT BLISS

Mike Grayson, president of network E-mail services from Figure Technologies, Inc. in Plano, Texas, said that at one major client site, a user whose machine was infected with a virus ignored the software protection. "Now, this guy is a Ph.D. scientist-type, and he's ignoring the

message and repeatedly trying to log on to the network," Grayson said.

"[It] turns out he had a bad virus that does random writes to your hard drive. He had gotten the virus from a golf game that he had been sharing with a bunch of his Ph.D. buddies. The virus did major damage to his hard drive, and he lost a lot of data that was not backed up.... Very expensive and very key data. Gone."

"Viruses are like heart attacks," Grayson said. "Nobody ever thinks it's going to happen to them." □

Spamproof

CONTINUED FROM PAGE 35

problem at some companies, such as when an employee sends an E-mail message to 5,000 users to announce his daughter's recital.

"Some of these types of messages are sanctioned by the company, but you don't want people randomly sending corporate-wide E-mail," Laracuta said. Some administrators configure mail servers to users can't send messages to "ALL." The top messaging vendors, including Lotus Development Corp. and Microsoft Corp., are building anti-spamming features in its products. Also doing so are Internet mail servers from Software.com, Inc. in Santa Barbara, Calif., and Ispwitch, Inc. in Lexington, Mass.

Ken Baumman said he likes the idea of snuffing out spam at the server. Baumman is a systems administrator at Marquette Medical Systems, Inc. in Milwaukee, which will use

Ispwitch's IMail Server 4.0. IMail Server lets administrators refuse mail from selected sites and prevent people from using the corporate server as a host.

"Our Lotus Notes clients have pretty intricate mail filters, but we would rather have users don't have to deal with the problem," Baumman said. The company doesn't plan to block E-mails without first checking with employees, he said.

Bob Small, director of network operations at GlobalNet International, Inc., an Internet service provider in Augusta, Ga., said his site had become a frequent victim of spoofing. Using features in IMail 4.0, he said, he can block mail from known spammers and prevent the redelivery of mail that has been bounced off his server.

SPAM SLAM

Software.com later this month will release Version 3.0 of its PostOffice Internet mail server, which includes features that guard against spamming and spoofing. PostOffice 3.0 can

stop spammers from making it appear that other users' servers are the source of junk mail. Administrators can prevent their mail servers from being used as relay hosts by using IP address restrictions. The update also will let systems managers block mail from certain addresses.

Dave Malcolm, a group product manager at Microsoft, said the company's newly released Exchange 5.0 can block spam if its source can be identified. And Lotus' Domino server has similar functions.

But not everyone sees a need to can spam at the server level. "Spamming usually happens because [spammers] locate E-mail addresses in Usenet groups," said Lance Spielman, a senior messaging specialist at Indiana University. "Since we have a lot of people here that post to newsgroups, we get a lot of spam."

End users at the school deal with spam individually. "We're not doing anything about it at the [Internet provider] or mail-server levels," Spielman said. □

Caravelle tool pushes 'net data

CONTINUED FROM PAGE 32

see those sites don't have to go out to the public Internet, saving corporate bandwidth.

A product such as Transcave could conserve bandwidth, but it would be appropriate only for users with narrow job functions who need limited, easily defined sources of information, said Lawrence Wisniewski, senior vice president of IS at Savva Business Credit Corp. in Chicago.

But he said he doubts the product would be useful at Savva, where researchers need unrestricted access to the Internet to reach its customers and research its investments. "Our culture is information-rich," Wisniewski said.

Ottawa consultant and accounting software accountant Bob Robertson uses Transcave across the Internet to keep his clients apprised of changes in tax law. "As soon as my clients log on to the Internet, Transcave checks my page and sees there's something new there, and it tells them," Robertson said. "It's less labor-intensive for me, and they feel like they're

getting something." With its "push" technology functionality, Transcave is similar to offerings from BackWeb Technologies, Inc. in Santa Clara, Calif., and Wayfinder Communications, Inc. in Mountain View, Calif.

One difference is that Transcave tracks versions of documents it collects, then highlights changes when it delivers the up-

dated document. The software runs on Windows 95 and Windows NT and is available immediately, starting at \$5,995 for 100 users.

Although the push technology element is unusual, Transcave is otherwise similar to other proxy servers, which make copies of remote Web sites on local servers. A popular offering is available from Netscape Communications Corp. in Mountain View, Calif.

Last week, Network Appliance, Inc. in Santa Clara, Calif., introduced a new version of proxy-server software it acquired when it bought Internet Middleware Corp. □

CANNING SPAM

Products	Feature	Availability
Ispwitch IMail Server 4.0	Refuses mail from selected sites and prevents using the corporate server as a host	June
Lotus Notes	Lets users block E-mail from certain addresses	Now
Microsoft Exchange 5.0	Blocks messages from an identified spammer; sends alert if someone tries to send a message through the server from outside the firewall	Now
Software.com PostOffice 3.0	Prevents mail server from being used as a relay host; blocks mail from certain addresses	Later this month

Remember when the idea of switching media was music to your ears? We do.



ATM solutions from Cabletron. A simpler way to work.

Today's network users expect on-demand access to voice, video and data applications—all without missing a beat. But just try to run these different media types through a standard client/server network and you'll quickly change your tune about the speed and reliability of the system.

Unless you switch to Cabletron and our vast collection of ATM solutions. From the 2.5 Gbps SmartCell ZX-250 Family for workgroup, wiring closet, or LAN backbone connectivity to the 10 Gbps SFCS-1000 data center switch all the way up to 75 Gbps carrier-class switches for enterprise backbones and public networks, Cabletron handles all requests. You say your network is not 100% ATM? Cabletron also offers high-speed packet-to-cell access devices.

ATM is the perfect vehicle, able to support medical imaging, interactive distance learning, computer animation, film editing and more. You get high bandwidth and guaranteed quality of service end-to-end, even across WANs. And Cabletron ATM efficiently converges your mission-critical media onto a platform that's stable, reliable and able to satisfy the most demanding users.

Our expertise comes from a well-orchestrated mix of research and development, partnerships and strategic acquisitions. We've been producing ATM solutions for over five years, and continue to drive open standards and innovations to make the technology even more harmonious to your operation.

So whether you're ready for a robust ATM backbone or just beginning to outline a multi-media strategy, Cabletron will lead you to the next wave of high-performance networking. Sounds simple enough. For a free ATM Glossary, call 603-337-0930 or visit us on the Web at www.cabletron.com.



New York Stock Exchange-Listed (CS)

CABLETRON
systems
The Complete Networking Solution™

REVIEW► OS/2 Internet tools

Host of utilities put OS/2 users on Web

CONTINUED FROM PAGE 55

ly crafted, OS/2-based Internet telephone application. Even if you don't want to chat with strangers across the Internet, InterCom would work on any TCP/IP-based computer with OS/2 multimedia installed and a microphone. You end up with an inexpensive extended virtual office or a simple, well, intercom.

INTERNET PHONE APPLICATION

InterCom (\$29.99) supports the Connectix Corp. QuickCam video camera (support for other cameras may follow) and useful features such as Caller ID, quick dial, an answering machine and a dialing directory. You can talk, exchange video, transfer files or share clipboard text. Because InterCom will communicate only with other InterCom clients, you will need to use a copy of the InterCom server, which is included in the package.

InterCom seamlessly supports dynamic IP users; in fact, that is an easy application for the new TCP/IP user to install and use. InterCom is pretty cool and fun, but what makes it especially compelling is its impressive use of OS/2's multithreading; the program uses very few CPU resources even when it updates video images every nine seconds.

FTP CLIENTS

File transfer protocol (FTP) programs are far from sexy, but they are the sort of useful tools many of us depend upon daily when we need to move data from one file repository to another via the Internet or an intranet. The text mode and graphic FTP programs included in OS/2 are OK

but limited. For example, you can't easily keep a "phone book" of frequently accessed FTP sites.

There are at least a dozen OS/2 FTP programs, most of which are quite good. Among my favorite programs are InterFTP (written by Jonathan Tew, \$29.99), Gibbon Computer Product, Inc.'s FTP (\$20) and FTP Browser (written by Jason Rushton, \$23). You can download shareware versions of all of them from BITM Micro.

FTP Browser is simple and fast. Gibbon's FTP has the benefit of resuming interrupted downloads, which averts the annoyance of restarting a 13M-byte download because of a dropped connection. But because InterFTP's tree-based interface minimizes the time I spend traversing FTP site directories, I click on it first.

USENET TOOL

An FTP client and a gopher client are included with Entec Innovative Software's Netcase Suite (www.entec.com/netc/), priced starting at \$30. Both do an adequate job, but I turn to Entec's newsreader, built in to this comprehensive Internet utility suite, to keep up with Usenet.

The Internet discussion newsgroups have a reputation as rough-and-tumble places, but the technical groups offer informative collections of wisdom about computing, management, writing skills and other topics of interest to business users. Entec's quality message threading helps me follow discussions that interest me and keeps track of mes-

sage postings and their responses. The program supports "killfiles," which block messages and correspondents you want to ignore.

EFFICIENT CONNECTION TOOL

Before you can use any of the resources of the Internet, you have to get there. The Dial Other Internet Providers (DOIP) program provided in OS/2 Warp isn't one of its best features.

FX Communications (www.fxid.com) recently released a \$20 utility, InJoy, a flexible and reliable Internet dial-up connection tool that is well worth the money. You get more features in the Enterprise version, which costs \$30.

InJoy, written by Wayne Jensen, isn't gorgeous, but then it doesn't need to be. This text-mode dialer supports 32-bit Point-to-Point Protocol (PPP) connections, 32-bit compressed Serial Line Internet Protocol connections, full terminal mode capability, dial-on-demand and IP masquerading. I didn't test IP masquerading, but I let you share PPP connections simultaneously with workstations on your LAN, including Mac OS, Windows 95, Windows 3.1 and all other TCP/IP clients.

InJoy doesn't have a brainless setup. I wish its installation would peek at the information I already had established for the DOIP and TCP/IP. But once it works, it is irrevocable and efficient, as any good utility ought to be. □

Schindler is a writer and reviewer in Scottsdale, Ariz. You can reach her at etsher@prinet.net.

Snapshots

COMPUTER VIRUS STATS

Experimented a virus at their site:

Second half of 1995: 77%

Second half of 1996: 97.9%

Most recent to-behave virus detected:

Staff days lost, 1996: 10

Staff days lost, 1997: 22

Cost, 1996: \$8,300

Cost, 1997: \$8,366

Source: 300 Companies

Source: National Computer Security Association, Columbia, Pa.

PRODUCTS

INSIGHT SOFTWARE SOLUTIONS, INC. has announced Keyboard Express 2.0. Windows keyboard macro software to aid use of the Internet.

According to the Bountiful, Utah, company, new features in the latest release let users schedule macros to play at a given time, repeat macros and play sounds. A user can also assign a hot key to a specific window, assign the same key multiple times for different windows and activate a window from within a macro. Users can check for electronic-mail messages while away or to fill out forms on the Internet with the touch of a key.

Pricing starts at \$24.95.

For more information, contact:

(801) 299-1890

www.wintools.com

PICTUREWORKS TECHNOLOGY, INC. has announced Spin, software that transforms multiple still images of a scene into wide-angle still pictures and interactive 360-degree panoramic movies.

According to the Danville, Calif., firm, Spin can be used for multimedia applications, including World Wide Web sites.

Spin costs \$79.95.

PictureWorks Technology

(510) 855-0001

www.pictureworks.com

DIGITAL EQUIPMENT CORP. has announced the Digital Voice Plugin, a browser plug-in that lets users record and send voice electronic mail directly from a World Wide Web page.

According to the Maynard, Mass., company, Voice Plugin messages can be listened to with popular E-mail and audio applications without more software. Users need a Netscape Communications Corp. Navigator or Gold 3.x browser, a Windows 95 or Windows NT 4.0 operating system, an Intel Corp. PC with a sound card and microphone and a Simple Mail Transfer Protocol server for sending E-mail.

The plug-in is free at interface.digital.com/voice.

Digital

(617) 654-7600

www.digital.com

For important CD-ROM projects, just say no.

As in no hassles. No missed deadlines. No problems. When you're responsible for CD-ROM duplication, packaging and distribution, you can't afford surprises.

MEGASOFT understands. Our experienced project managers have handled thousands of CD projects just like yours. Whether it's large and complex or a short promotional run, rest assured all the deadlines and details will be taken care of—mastering through packaging and distribution. MEGASOFT's Quality Management System is ISO 9002 certified.

(Ask about our software application for intranet/extranet distribution!)



MEGASOFT

For details and a copy of our
CD-ROM Project Planning Kit call
1-800-MEGASOFT (344-2743)
today or visit the resource center
at <http://www.megasoft.com>

no surprises

819 Highway 33 East, Brookfield, NJ 07078

Count on MEGASOFT for CD-ROM:

- Mastering
- Manufacturing
- Printing (up to 4 colors)
- Packaging
- Distribution
- Warehousing
- Promotion

I have to
reach my
Year 2000
deadline.

But how?

Ardes 2k is the only proven millennium solution.

The deadlines for Year 2000 compliance cannot be missed. This innovative product gives your technology specialists the knowledge and resources they need to understand, and fix, your millennium problems.



Ardes 2k was developed as the successful result of Data Dimensions' 5 years practical experience with creating solutions for the millennium problem. It integrates proven strategies, processes, and tools based on experience evaluating and updating over 3 billion lines of code for hundreds of organizations, including over 30 Fortune 500 companies. It allows your organization to develop trained millennium experts quickly and easily, with quality support from a worldwide leader.

Customizable, Scalable, Tools-Neutral Technology

Ardes 2k incorporates a tools-neutral process bound only by the best automation software available. The key is a unique Modular Repeatable Process (MRP) that can be customized for individual environments, dynamically scaled to any size organization, and configured to measure any quantifiable results. As a result, your cost and training time is effectively minimized, while your enterprise's productivity and efficiency is significantly increased.

Innovative Automated Technology Transfer

Data Dimensions' unique technological process lets you easily transfer Ardes 2k knowledge to your information systems personnel and effectively implement solutions. By utilizing CD-ROM and Internet technology, Ardes 2k Year 2000 solutions are now available to a worldwide client base.

Comprehensive Enterprise-wide Solutions

Ardes 2k is the most comprehensive millennium update package available. The easy-to-use format provides technical information that can be optimized for your enterprise environment via CD-ROM, Internet Web site access, complementary support tools, products and services.

Get Started Now

Ardes 2k is the only proven solution that can help your organization meet the complex challenge of 21st century compliance.

For more information, or to order Ardes 2k, call Data Dimensions at 800-499-1979, or visit our Web site at <http://www.data-dimensions.com>

Ardes 2k™



A PRODUCT OF
DATA DIMENSIONS, INC.

2000 Skyline Tower • 10900 N.E. 4th Street
Bellevue, Washington 98004



When you're famous for
making BLT
you don't want to run

Microsoft
SOLUTION PROVIDER

Accounting

Hospitality

Banking

Eenie

Meenie

Miney

Mo

The choice is yours: Gamble with your future, or go with a proven Year 2000 technology leader. Like Peritus.

Good choice.

Because only Peritus and Peritus' partners help you raise the right issues, intelligently ask the right questions, and assess your needs—from throughput speed to data integrity, to your ability to share data with customers and suppliers.

And, once your needs are established, only Peritus offers a full suite of alternatives that fit your specific Year 2000 requirements, from data expansion to logic correction and simple data compression. That's why more leading companies and top service providers around the world are

currently using Peritus as their Year 2000 partner. And why you should, too.

Our Year 2000 solutions are just part of the value Peritus can bring to your company. As the world's leader in creatively managing the installed software base, we're revolutionizing the way people think about software. And we're making more business options available to you than were ever thought possible.

The choice is yours: Take a chance, or go with the smart choice. Call Peritus today at 1-800-598-7787 for more information, or visit our web site at www.peritus.com.

Peritus

CREATIVE EXCELLENCE IN SOFTWARE EVOLUTION

Corporate Strategies

Case Studies • Trends • Outlook

Briefs

STAFFING PROBLEMS

Out of 1,442 CIOs recently surveyed:

61% can't recruit the SAP experts they need

64% can't recruit the database experts they need

76% can't recruit the client/server architects they need

Relationship management

► Outsourcing deals pose problems for IS

By Thomas Hoffman
PALM SPRINGS, CALIF.

JUST WHEN IS managers think they've recovered from an information technology outsourcing deal, they get crushed by a 500-pound gorilla called relationship management.

The problem with many deals, said outsourcing veterans and analysts at a Gartner Group, Inc. conference here last month, is that senior management is usually too mesmerized by visions of seven-digit cost savings to appreciate the amount of time and number of people necessary to manage both the contract and the vendors.

It is a problem, particularly because most outsourcing deals fail to live up to their lofty expectations. That was one of the factors that bankrupted Chuck Emery to Blue Cross/Blue Shield of New Jersey last year as chief information officer at the Newark-

based health insurance firm.

Blue Cross outsourced the bulk of its information systems operations to IBM in 1994, including its data center, wide-area network and application development.

CLEANING HOUSE

The agency brought in Emery to clean up mistakes Blue Cross made in the contract. For example, Blue Cross struck a flat-rate contract for IBM to run IT functions such as direct-access storage devices and machine cycles, because IBM was the prime contractor. Blue Cross' outsourcing deal has created "some serious end-user dissatisfaction" — not with IBM's quality of services, but with the high costs of add-on services such as new application development, Emery said.

To rectify the situation, Emery now solicits bids for new work that falls outside of the IBM

contract, such as application development. He then compares costs among different vendors. Blue Cross isn't alone. After

BC Gas Utility Ltd. formed out its IT project management function two years ago, business relationship management, page 68

• State agencies move to share information

Linked systems keep data up to date

By Patrick Thibodeau

THE DATA STORED in state agencies' criminal justice information systems is often locked up as tight as any prisoner behind bars.

Most computer systems that state agencies use are isolated, so officials in the courts, district attorney's office, police and corrections departments can't freely share information on suspects or convicts. That lack of integration hurts crime-fighting efforts and boosts budgets, said officials who are now working to remove the shackles from their information systems.

Colorado is trying to change that.

Although each department in its criminal justice system had its own computer network, information shared among the agencies by police, prosecution and court and corrections workers was often sent via paper

files, which could be incomplete or might never arrive, said David Usery, chief information officer at the Colorado Integrated Criminal Justice Information System project.

That meant police officers didn't necessarily know about current warrants or restraining orders.

And prosecutors and judges often had to make decisions with incomplete information on a suspect's criminal background. Those information

gaps "give an opportunity to criminals to continue to do harm," said Patrick Ahlstrom, executive director of the Colorado Department of Public Safety in Denver.

Colorado expects to complete a \$2.7 million system by January that will let users at any of five agencies query databases anywhere in the system. Changes made by one agency will be updated automatically throughout the system via middleware and

State agencies, page 69

North Carolina's criminal justice information system will:

- Establish a statewide database for digitized fingerprints to speed identification.
- Establish a single source for criminal background information.
- Provide one source to query for all outstanding warrants.
- End redundant data entry.

Source: Police Information, New York

CUSTOMER SERVICE

Hotels seek to answer needs of business traveler

By Mindy Blodgett

WHEN THE Hilton Hotels chain began efforts to better accommodate road warriors more than a year ago, the hotelier pulled out all the stops. But it soon discovered it was heading too far in the wrong direction.

In certain guest rooms, the hotel set up "smart desks," said Bob Dirks, senior vice president of marketing at Hilton Hotels Corp. in Beverly Hills, Calif. "We had all sorts of hardware: a printer, a fax machine and a PC loaded with all sorts of software," Dirks said.

Then we found that most people were bringing their own laptops. All these people wanted was a large desk, two phone lines, a data port — basic stuff," Dirks said. "And that is the Hotels, page 68

Briefs

STAFFING PROBLEMS

- Out of 1,442 CIOs recently surveyed.
- 61% can't recruit the SAP experts they need
- 68% can't recruit the database experts they need
- 76% can't recruit the client/server architects they need

Source: Statistica & Research, New York

EDS in \$900M deal
Plano, Texas-based Electronic Data Systems Corp. won a contract worth up to \$900 million to manage and enhance global network services for EBS, a provider of electronic brokerage services for Internet foreign exchange. EBS is owned by subsidiaries of 14 banks, including BankAmerica Corp., The Chase Manhattan Bank Corp. and Citibank.

Management channel

Information technology professionals can tune in news about managing networks and systems on a special channel of the PointCast Network. Tivoli Systems, Inc. in Austin, Texas, and PointCast, Inc. in Cupertino, Calif., launched the free "Manage IT" channel last month.

The channel will provide news, white papers and information from industry analysts and trade publications. Client software for accessing the channel can be downloaded from www.pointcast.com or www.tivoli.com.

Boeing investment

The Boeing Co. last week said it would invest up to \$100 million in TeleVideo Corp.'s effort to design, build and launch an "Internet-in-the-sky" telecommunications network.

The announcement means Seattle-based Boeing will gain a 10% stake in the TeleVideo network project, which will launch several hundred low-orbiting satellites. The network will cost an estimated \$9 billion to build. Service is scheduled to begin in 2002.

Relationship management

Outsourcing deals pose problems for IS

By Thomas Hoffman
PALM SPRINGS, CALIF.

JUST WHEN IS managers think they've recovered from an information technology outsourcing deal, they get crushed by a second round of outsourcing called relationship management.

The problem with many deals, said outsourcing veterans and analysts at a Gartner Group, Inc. conference here last month, is that senior management is usually too mesmerized by visions of seven-digit cost savings to appreciate the amount of time and number of people necessary to manage both the contract and the vendors.

It is a problem, particularly because most outsourcing deals fail to live up to their lofty expectations. That was one of the factors that brought Chuck Emery to Blue Cross/Blue Shield of New Jersey last year as chief information officer at the Newark-

based health insurance firm. Blue Cross outsourced the bulk of its information systems operations to IBM in 1994, including its data center, wide-area network and application development.

CLEANING HOUSE

The agency brought in Emery to clean up mistakes Blue Cross made in the contract. For example, Blue Cross struck a flat-rate contract for IBM to run IT functions such as direct access storage devices and machine cycles. Because IBM was the prime contractor, Blue Cross' outsourcing deal has created "some serious end-user dissatisfaction"—not with IBM's quality of services, but with the high costs of add-on services such as new application development, Emery said.

To rectify the situation, Emery now solicits bids for new work that falls outside of the IBM

contract, such as application development. He then compares costs among different vendors. Blue Cross isn't alone. After

BC Gas Utility Ltd. farmed out its IT project management function two years ago, business Relationship management, page 48

State agencies move to share information

Linked systems keep data up to date

By Patrick Thibodeau

THE DATA STORED in state agencies' criminal justice information systems is often locked up as tight as any prisoner behind bars.

Most computer systems that state agencies use are isolated, so officials in the courts, district attorney's office, police and corrections departments can't freely share information on suspects or convicts. That lack of integration hampers crime-fighting efforts and boosts budgets, said officials who are now working to remove the shackles from their information systems.

Colorado is trying to change that.

Although each department in its criminal justice system had its own computer network, information shared among the agencies by police prosecutors and court and corrections workers was often sent via paper

files, which could be incomplete or might never arrive, said David Usery, chief information officer at the Colorado Integrated Criminal Justice Information System project.

That meant police officers didn't necessarily know about current warrants or restraining orders.

And prosecutors and judges often had to make decisions with incomplete information on a suspect's criminal background. Those information

gaps "gave an opportunity to criminals to continue to do harm," said Patrick Ahlstrom, executive director of the Colorado Department of Public Safety as Denver.

Colorado expects to complete a \$2.7 million system by January that will let users at any of five agencies query databases anywhere in the system. Changes made by one agency will be updated automatically throughout the system via middleware and

State agencies, page 69

North Carolina's criminal justice information system will:

- Establish a statewide database for digitized fingerprints to speed identification.
- Establish a single source for criminal background information.
- Provide one source to query for all outstanding warrants.
- End redundant data entry.

Source: Press-Record, Raleigh, N.C.

CUSTOMER SERVICE

Hotels seek to answer needs of business traveler

By Mindy Blodgett

When the Hilton Hotels chain began efforts to better accommodate war-torn more than a year ago, the hotelier pulled out all the stops. But it soon discovered it was heading too far in the wrong direction.

In certain guest rooms, the hotel set up "smart desks," said Bob Dirks, senior vice president of marketing at Hilton Hotels Corp. in Beverly Hills, Calif. "We had all sorts of hardware: a printer, a fax machine and a PC loaded with all sorts of software," Dirks said.

"Then we found that most people were bringing their own laptops. All these people wanted was a large desk, two phone lines, a data port—a basic stuff," Dirks said. "And that is the

Hotels, page 48



Hotels answer travelers

CONTINUED FROM PAGE A7

direction we are now going in, back to the basics."

From basic requirements, such as multiple telephone lines and data ports, to high-speed Internet access, hotels in the past year have evolved more services aimed at answering the myriad needs of business travelers.

For example, while Hilton has re-emphasized relatively simple items such as larger desks, the hotel chain also has started offering Internet kiosks in its hotel lobbies from Infone, Inc., a San Diego-based vendor of Internet products. Hilton expects to have more than 60 Infone stations installed in hotels nationwide by year's end.

GIVE 'EM WHAT THEY WANT

The hotel also offers life-size, real-time videoconferencing via large screens in "TeleSuites" in certain hotels.

And in the past three weeks, Hilton has started to offer special high-speed Internet access

through the guest room television screens at two San Diego-area hotels. In partnership with On Command Corp., a provider of entertainment and information services technology, and WebTV Network, Inc., an online service, guests can use a special

"I want data ports and a nice, large desk. But I don't want to pay a premium."

— Asmar Madyun, AT&T

keyboard attached to the television to access electronic mail, browse the Internet and visit chat rooms.

Business travelers said they expect these services as part of their room costs.

"I want data ports and a nice, large desk," said Asmar Mad-

yun, a technical support manager at the network services division of AT&T Corp. in Berkeley, N.J. "But I don't want to pay a premium."

Recent developments in hotels for business travelers include the following:

- **Krischen Migani**, general manager of the Hyatt San Jose, said efforts are under way to turn that hotel into the "most high-tech hotel in the world." To that end, Migani said, the 474 rooms in the 35-year-old hotel in San Jose, Calif., are being renovated with PCs equipped with high-speed Internet access. Also, T1 and Integrated Services Digital Network lines are being wired to the conference rooms. Each room will also have two data ports, a fax machine and copier.

- **Clarion Hotels** in Silver Spring, Md., is upgrading 25% of its 73 hotels in the U.S. and Canada, providing task lighting, speaker phones, data ports and ergonomic office chairs.

- **The Red Lion** in San Jose is installing T1 lines to its meeting rooms and T1 lines for videoconferencing.

Relationship management

CONTINUED FROM PAGE A7

analysts at the company were confused about their roles and felt lost in the new organization, said Rowena K. Liang, a business leader at the utility in Vancouver, British Columbia.

After achieving mixed results with the contract, BC Gas decided to bring project management back in-house six months ago. Since then, its business analysts have been happier and more productive, Liang said.

MAKING IT EASY

Others are finding that selective outsourcing engagements are easier to manage. One of the biggest challenges that Sony Pictures Entertainment faces is providing adequate levels of desktop support to its 200 executives and 3,000 end users.

Despite recommendations by Stamford, Conn.-based Gartner Group that companies provide one desktop support person for every 50 end users, cost constraints forced Sony to scrape by

with a ratio of one support person to 300 users, said Steve Heckler, senior vice president and CIO at the Culver City, Calif.-based studio.

MOVIES FIRST

Movie production staffers get top priority for desktop support, followed by Sony's executives.

"We're just keeping our heads above water," said Heckler, whose company produced the recent hit films *Jerry Maguire* and *Anaconda*.

To help deal with the support problem, Sony is delegating more time-consuming desktop functions such as PC configuration and installation to a local PC distributor.

Because the outsourced functions are limited in scope, Heckler said, he spends less time managing the contractor relationship and more time trying to solve end-user needs. "It seems to be working pretty well for us," he said. □



Built by engineers.

British Aerospace plans ERP system

By Ron Condon
London

THE LARGEST enterprise resource planning (ERP) installation in Europe has begun at the military aircraft division of British Aerospace Defence Ltd.

The complete system, which will take several years to implement, will replace 200 application programs that run on a mixture of hardware, mainly IBM mainframes.

British Aerospace, which outsourced its information systems to Computer Sciences Corp. in 1994 in a 10-year, \$1.5 billion contract, plans to install the Baan IV ERP system from Netherlands-based The Baan Co. Eventually, the system will have 5,000 users online. The software will run on hardware supplied by Sun Microsystems, Inc. using database software

from Oracle Corp.

The implementation will form part of a complete review of British Aerospace business practices started two years ago. British Aerospace is based in Preston, England.

"We concluded that our existing IT was just not good enough," said Paul Murphy, the project's director. "We wanted a system to handle all parts of our product life cycle and looked for an ERP to handle our future operational requirements."

During the feasibility trials for the system, Murphy said, Oracle, Sun and Baan ran the largest-ever benchmark for Baan IV, simulating usage by 3,667 users, using Oracle 7.3 running on a Sun Ultra Enterprise 6000. □

Condon writes for the IDG News Service in London.

State agencies link systems

CONTINUED FROM PAGE A7

servers developed by Sybase, Inc. in Emeryville, Calif.

State agencies aren't the only ones trying to share criminal justice information. The U.S. Department of Housing and Urban Development now does background checks on public housing applicants. New laws concerning child support, the whereabouts of sex offenders, and firearms purchases also are increasing the need for timely, complete and readily available criminal justice information.

But progress toward total integration is slow. Colorado may have integrated its state agencies, but it stopped short of tying in a web of local police and sheriffs' department systems, because the cost was too high.

A recent study of North Carolina's criminal justice system by Price Waterhouse in New York put the cost of a project to link state and local systems at more than \$50 million.

"No other states have looked

at [systems integration] with the depth that we have," said Scott Peters, an IS program and policy development specialist at the Governor's Crime Commission in Raleigh, N.C.

Work on the system, which kicked off this year with a project to standardize ways to share data, will take a decade to complete, and funding isn't certain, Peters said.



North Carolina officials envision a system where police officers using mobile computers can get complete criminal histories, along with suspects' photos. They also could thumb-

print suspects with a scanner for positive identification.

Identifying suspects using fingerprint cards can take two weeks, and officers in the field get only limited information.

The best way for states to win support for such projects is to avoid centralized databases, because it is cheaper and easier to let agencies manage their own databases and create links among them, said John Ridgeway, CIO at the Florida Department of Law Enforcement in Tallahassee.

Florida has legislation pending that would require all state criminal justice agencies to begin developing a common network that would consolidate criminal records.

"What we have today, in a number of cases, is some single person sitting in a police station with three different PCs on his desk because you have three different networks," Ridgeway said. □



Used by normal people.

Managing

...the night
...asked for
...the
...work day

N DETAILS

BY ROBERT L. SCHEIER

THE YEAR 2000► As they move from planning their work to doing actual repairs, IS managers are finding the job even more messy and complicated than they expected. Their mes-

sage: Get ready to ask a lot of tough questions, sweat the details and fight for the money you need. Here's a look at the lessons that three year 2000 conversion leaders have learned so far.

O'S IN CHARGE HERE?

The answer isn't that simple, as John Frohlich, director of emerging technologies at Medical Mutual of Ohio in Beachwood, Ohio, knows after finishing his first pilot year 2000 conversion.

When Frohlich's staff began work on his pilot conversion, it "wasn't asking the right questions. We were asking the same questions of two different people. And the IS consultant staff wasn't spending enough time reviewing the answers," he says. "I estimate we lost close to two months" going back to identify which user groups owned which programs within applications, which programs were most important and which were obsolete and could be discarded without repair.

That information is critical to understanding which programs to fix first, how much money it will take to fix them and how to properly test them. But the owners of the first systems to be fixed didn't understand the level of detail needed.

For example, one database management utility was owned by the health insurer's technical services area, but different programs within that utility

were owned by database administrators or the users of various applications that accessed the databases. "We had to go through the explanation of what we were looking for numerous times before the department knew we needed to understand it down to the program level," Frohlich says.

Worse, year 2000 team members were asking users the same questions over and over. Someone from the maintenance group would ask information systems users about their application, he says. Then, "maybe the group doing the testing would go out and ask those questions. Then I had another group that was controlling the renovation... asking the same department the exact same questions."

Finally, Frohlich didn't have the IS resources he needed to review to ensure that his staff had identified all the files and programs to be renovated.

He solved the first problem by

teaching his staff to clearly explain the level of detail they needed from application users. They had to understand the application's idiosyncrasies, he says, such as circumstances that require special testing or a function that is "a hot point with a very high-profile customer."

He also drew up a more detailed chart outlining the responsibilities of everyone involved in year 2000 work, emphasizing the need for project leaders to communicate with one another.

Finally, he made sure the IS organization committed enough people to do early checks of the information that was getting from user departments. That was relatively easy, he says, because the chief information officer aggressively backs the year 2000 effort and helped sell its importance at the board level. As a result, the conversion of the second "cluster" of applications is running a month ahead of schedule.

**Communicate,
coordinate,
clarify!**

P THE HOOD

Vendors call it the Spanish Inquisition. Laurie Nance and Jackie Bachenberg call it common sense.

What both sides are referring to is the grilling Nance and Bachenberg give to salespeople who come in touting their year 2000 software tools. At a time when everyone from untested start-ups to venerable mainline vendors are touting the praises of their year 2000 tools, taking a detailed, skeptical look has already saved the two money and time and prevented problems.

"We've actually gone in and asked vendors to describe what standard date routines they use in their renovation process," says Nance, a year 2000 project executive at Equifax, Inc. in Atlanta, a supplier of credit and other

business information. Standard date routines are important, she says, because they're much easier to maintain than a variety of date routines.

Such detailed questions are critical when trying to fix a very specific problem. Consider Equifax's challenge of fixing complex mainframe assembly code, which is considerably more complex and harder to understand than Cobol. What's more, Nance says, "people who use assembly code are typically very clever" and have tweaked the code in unique ways to writing the best performance out of the hardware on which it runs.

**Ask vendors
tough
questions.**

Equifax found that most conversion packages could scan assembly code only for fields with obvious labels such as "date" rather than find dates stored in

cryptic locations with names such as "r008," says Bachenberg, an internal consultant on the Equifax project. She and Nance found Fermat 2000, from Software Migration Ltd. in Durham, England, "which actually understands how assembly works," Bachenberg says. It's helping Nance and Bachenberg convert their assembly code, which handles functions such as credit reporting.

The pair's sharp shopping also came in handy when they were looking for a way to convert Equifax's CICS code from the older macro level to the newer, more user-friendly command level. That move is "the big domino" because IBM's only year 2000-compliant version of CICS won't support the older macro level, says Bachenberg. After carefully checking references, they found Uthmanis Corp., a software and services firm in Islamorada, Fla., which could perform the conversion less expensively than other vendors.

QUALITY BYTES

It's easy to downplay the year 2000 problem because you've actually seen it up close. Just ask David Ryan, a senior programmer analyst at AdWare Systems, Inc. in Louisville, Ky.

When interviewed earlier this year for *Computerworld* survey, Ryan planned to be done testing the conversion of his first 370,000-line application by April 1. Now, he says, "It's more like July 1," and he'll be done only with the most critical two-thirds of the modules within the system.

What tripped up Ryan is what analysts have warned will hamper many year 2000 efforts: As he began code conversion, he discovered that finding and fixing the subtle ways programs might use year fields will take longer than he expected.

Some of the affected code is relatively easy to find, such as the function calls that translate four-

digit years within a database into the two-digit years users see on their screens. It gets difficult, Ryan says, in places where programmers have stripped the numbers or day out of dates and done things separately with them, such as performing a calculation on the date to create a customer identification number.

"That was something that was not very apparent on the initial pass through the system," says Michael Waltermeyer, vice president of software development at AdWare Systems.

Ryan has an additional responsibility because the software he's converting is used not only by AdWare's parent

company, but also by other advertising agencies to buy various types of advertising. He has written two tools to help with the conversion, one that automatically expands date fields within databases and another that compares files to help

identify changes that need to be made in programs. But he isn't even trying to build a tool to automatically do the code conversion. "We have too much converted stuff to sit down and write a utility that would do things like that," Ryan says. □

**You don't know
how hard it is
until you've
tried it.**

Scheier is Computerworld's senior editor, management.

1971

days to 1997

YEAR 2000 SCOREBOARD

An occasional series on year 2000 trends, issues and statistics

Lessons from the trenches

Building—and burning—bridges

One of the challenges of complex year 2000 conversions is that not all the modules or applications within a system can be made year 2000-compliant at once. That means building software “bridges” to let fixed portions of the system accurately exchange data with parts of the system still awaiting repair. With hundreds or even thousands of modules within some systems, just building and maintaining the system of bridges can be a complex task.

At United Health Care Corp. in Minneapolis, Lynette Zaccaria, senior project manager, is assigning “bridgemen” to handle that job. “We have a person... whose sole job is to understand all the bridging products on the market, to test them, to look at all our opportunities to do bridges and to document the best practices to do bridging,” she told a recent year 2000 conference in New York. It’s up to the applications groups within information systems to write the bridges and, just as important, to remove them when they’re no longer needed.

Less taxing solutions

How do you keep year 2000 efforts from bogging down in squabbles over how to solve the problem?

At the Internal Revenue Service, such problems get bounced to a “core technical team” made up of IRS specialists brought together especially to focus on that issue, says Julia McCreary, technical adviser to the tax agency’s year 2000 effort. “They came up with their best recommendation for the solution of that problem,” and that recommendation is sent to the technical team working on the problem, she says.

That team has to tell management when it will use the recommendation or implement its own solution. Along with ensuring that the renovation process keeps moving, McCreary says, this approach also “diffuses opposition within the organization, because we’re using our own people to identify our own solutions.” The IRS has already used such a special team to help it figure out how to

Money talk

Many companies have already plunged into their year 2000 conversion work, but the budgetary impact on information systems will be much harder in 1998 and 1999, according to a survey of 300 Meta Group, Inc. customers.

SOME FINDINGS

97% of companies say year 2000 work will consume up to 25% of their budgets this year

3% will spend more

83% say they plan to spend more than 25% in 1998 and '99

17% will spend less

25% say they will reduce spending on new functionality for their systems to pay for year 2000 projects

22% say they will reduce spending to enhance existing functionality

11% say they will cut back on new development

Source: Meta Systems, Inc. survey of 300 Meta Group, Inc. customers

Douglas P. Wetzel, president of International Software Finance Corp. in Wilton, Conn., says companies are beginning to feel the strain of millennium conversion and won’t see any relief around Jan. 1, 2000.

Wetzel, whose firm provides software vendor finance programs, says he sees a lot of “robbing-Peter-to-pay-Paul psychology” that will delay other software projects. He cited a recent estimate by software vendor Platinum Technology, Inc. in Oakbrook Terrace, Ill., that every \$1 spent on year 2000 compliance will create a backlog for non-year 2000 applications costing \$5.

In a recent report, Wetzel says, “Revenue and earnings shortfalls are likely to occur, [and] competitive advantages are at risk.” But he sees opportunity for companies that can execute an “effective millennium acquisition strategy. Such a strategy will enable businesses to acquire necessary core products and services while becoming year 2000-compliant.” —Rick Sals

find and fix year 2000 problems in its telecommunications infrastructure.

Silver lining for upgrades

Upgrading everyone’s desktop PC every few years is an expensive and painful necessity for many companies. But some IS managers are speeding up that migration to ensure that their desktops and networks are year 2000-compliant. Brian Wegenroth, a vice president in the information technology practice at New York-based Booz Allen & Hamilton, Inc., cites the case of

one global manufacturer that has a very heterogeneous mix of technology, much of it several years old.

That customer, which he declined to identify, had planned to replace its distributed computing infrastructure within three to four years. It now plans to replace it by the end of next year. If all goes as planned, the customer will not only eliminate the need to make the older systems year 2000-compliant but also speed the cost savings that come from an easier-to-manage standard desktop and distributed computing environment.

—Robert L. Schrier

Millennium Web links

Best practices

Are you a year 2000 project manager looking for a “best practice,” tip or opinion? Check out a new best practices World Wide Web site from the Society for Information Management’s (SIM) Year 2000 Working Group. Visitors can focus on any of 12 main topic areas, with multiple conversations under each topic. To join in, enter via the SIM home page (www.simnet.org) and link to the SIM Year 2000 Working Group Web page. First-time users must register.

Market tracking

If you want to check up on how bullish or bearish investors are on year 2000 product and service providers, take a look at the De Jager Year 2000 Index (quote.yahoo.com/quotes?SYMBOL=SYMBOL&detail=T) developed by the American Stock Exchange and De Jager & Co., a Brampton, Ontario, consulting firm headed by year 2000 consultant and speaker Peter de Jager. You can also link to the index via the year 2000 page on our Web site, @Computerworld (www.computerworld.com/year2000/index.html).


On the calendar

CSI’s Year 2000 Issues and Answers, Boston, May 20-22. Contact: Digital Consulting, Inc. (DCI), Andover, Mass. (508) 470-3880; Fax: (508) 470-0526; E-mail: conf@dcicorp.com

International Symposium on the Year 2000, Gaithersburg, Md., June 9-10. Contact: National Institute of Standards and Technology, Gaithersburg, Md. (301) 973-3880; Fax: (301) 948-8067; E-mail: nci.phillips@nist.gov; Web address: www.nist.gov

COMPUTERWORLD

Looking for a one-stop shop for your 2000 information? Look to the year 2000 page on our Web site (www.computerworld.com/year2000/index.html).



With the right
protection, the
century change
isn't nearly so
frightening

Viasoft's Bridge 2000® fixes your initial registration cost.

VIASOFT

The SAS



Data Mining Solution

Discover the Diamonds in Your Data Warehouse

Introducing the first-ever, fully integrated data mining solution...one that maximizes your return on investment in data warehousing and data marts—as decision makers exploit your customer data for competitive advantage.

SAS Institute, for 20 years the leader in data discovery, provides the most complete and reliable data mining solution for modeling, measuring, and enhancing the profitability of your business. This Web-enabled, point-and-click approach lets you employ OLAP, neural networks, churn analysis, and other analytical and visualization techniques to improve customer retention, target key prospects, profile market segments, detect fraud, analyze customer response, and much more.

Begin Your Discovery with our Free Web-Integrated CD ROM

Digging for Diamonds: The SAS® Solution for Data Mining lets you explore data mining from both a business and an IT perspective. And it's linked directly with our World Wide Web site, so you can continue to make new discoveries and gain fresh insights.

To request your copy, visit SAS Institute at www.sas.com/datamining/ or give us a call.



SAS Institute Inc.

The Business of Better Decision Making



SAS is a registered trademark of SAS Institute Inc. Copyright © 1997 by SAS Institute Inc.

Visit us at Booth #3837 at Networld + Interop.

in School's out for summer

Top IS pros find value in executive education

By Leslie Goff

TWO WEEKS at Harvard Business School's executive-education course, Delivering Information Services, gave Richard E. Hoynes the perspective he needed to help develop a strategic plan for Warner-Lambert Co.

A week at MIT's Executive Short Course for Chief Network Officers helped ease Ken Carlson's transition from software development to operations management at MCI.

"The course gave me a week away from the job, where I could devote my energies to thinking," says Carlson, executive director of information technology operations at MCI Communications Corp. in Colorado Springs.

Summer education programs offer top information systems managers invaluable exposure to colleagues in other industries, validation of the issues they face and ideas about alternative approaches to common problems.

"Because of the Harvard experience, I had a reference point, and I knew how to develop a global, high-performing organization," says Hoynes, director of research information management at Warner-Lambert's health care and confectionery divisions in Morris Plains, N.J. "It helped me clarify the foggy issues that I was dealing with, like how you deal with the conflicting priorities of your [internal] customers."

For example, Hoynes was the only IS representative on a strategic development team, and he says the Harvard course "gave me an understanding of how to communicate and discuss IS strategy to support the long-term plan."

A typical day in an Ivy League-caliber executive education program includes lectures by authorities in IS education, team discussions of IS case studies and informal gatherings that help build camaraderie among the executive classmates.

The courses usually have a four- or five-figure price tag, but IS executives say they are worth it. Hoynes says he would have footed the \$9,000 bill had Warner-Lambert not been willing.

"You can't put a price on knowledge and experience," Hoynes says. "It's what makes you good at what you do."

10 Summer Executive Education Opportunities

CARNEGIE MELLON UNIVERSITY

Pittsburgh

Global Information Management:

New Concepts, Tools and Strategies

Dates: July 29-Aug. 1

Cost: \$2,350, including tuition and fees, books and materials, room meals and special events

Software Development for Managers (Two courses

are available in this track: Quantitative Software Project Management and The Personal Software Process: A Gentle Introduction)

Dates: June 23-27

Cost: \$1,495 for both courses; \$640 for Quantitative Software Project Management; \$560 for The Personal Software Process: A Gentle Introduction; fees include tuition and materials

Contact: Clark Jordan, Graduate School of Industrial Administration (412) 268-2304

E-mail: ccjordan@andrew.cmu.edu

Web address: www.cs.cmu.edu/~summerschool

HARVARD UNIVERSITY

Cambridge, Mass.

Delivering Information Services: Building an Information Technology Infrastructure to Compete in a Network Era

Dates: July 13-15

Cost: \$9,000, including tuition, materials, accommodations and most meals

Competition & Strategy

Dates: June 8-14

Cost: \$8,500, including tuition, materials, accommodations and most meals

Contact: Harvard Business School, Executive Education Programs (617) 495-6555

E-mail: executive_education@hbs.edu

Web address: www.exec.hbs.edu

MIT

Cambridge, Mass.

Current Issues in Managing Information Technology: Transforming the Organization Through Information and Infrastructure

Dates: June 16-19

Cost: \$2,350, including tuition, materials, luncheons and events

Contact: Center for Information Systems

Research (617) 253-2348

E-mail: CISR@mit.edu

Web address: web.mit.edu/cisr/www/cisr.htm

The MIT Short Course for Chief Network Officers: Managing the IT Network for Global Competitiveness

Dates: May 19-23

Cost: \$4,600, including tuition, materials, continental breakfasts, luncheons and three dinners

Contact: Sloan School of Management

(617) 353-4432

E-mail: jnoos@mitvma.mit.edu

Web address: web.mit.edu/sloan/www/academics/short.html

STANFORD UNIVERSITY

Stanford, Calif.

Strategic Uses of Information Technology

Dates: May 11-16

Cost: \$5,000, including tuition, books, materials, accommodations and meals

Summer at Harvard also means catching a glimpse of rowers on the Charles River...



Stanford Executive Program

Dates: June 22-Aug. 5

Cost: \$27,500, including tuition, books, materials, accommodations and meals

Contact: Office of Executive Education, Graduate School of Business (415) 733-3341

E-mail: executive_education@gsb.stanford.edu

Web address: www.gsb.stanford.edu/eeep/index.html

UNIVERSITY OF PENNSYLVANIA

Philadelphia

Managing Technology and Innovation

Dates: June 22-27

Cost: \$4,750, including tuition, accommodations and meals

Contact: Executive Education Department, The Wharton School of Business (800) 255-1934

E-mail: execed@wharton.upenn.edu

Web address: www.wharton.upenn.edu/execed/eeccat/ri.html

Advanced Management Program

Dates: June 1-July 4

Cost: \$28,500, including tuition, accommodations and meals

Contact: Robin Salzman, Wharton School of Business (215) 898-1779

E-mail: salzmanr@wharton.upenn.edu

Web address: See previous listing

Goff is a freelance writer in New York.

Separated at birth?

Sun and Sybase. An alliance founded on a series of firsts. As the first strategic partner for Sybase, Sun is the company with the most Sybase experience. Sun is also the first company to develop a comprehensive service relationship with Sybase to deliver the ultimate in customer satisfaction. And when Sybase develops new applications, Sun is the platform they're developed on. Which means that you get business solutions with proven technology and optimized performance. The seamlessness between Sun and Sybase is the reason we can deliver the highest quality and best-performing products and services available. But then that's what true alliances are all about. To find out more, contact us at www.sun.com/sepcw or www.sybase.com. **THE NETWORK IS THE COMPUTER™**

©1997 Sun Microsystems, Inc. All rights reserved. Sun, Sun Microsystems, the Sun Logo and The Network Is the Computer are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries. Sybase and the Sybase logo are registered trademarks of Sybase, Inc. "Separated at birth" is a registered trademark of JPM Magazine.

SETTING SOME RULES FOR VENDORS' TACTICS



How do you keep from being outfoxed by tricky vendors?

Unlike the days when you could never get fired for recommending IBM, there are no safe choices for safe vendors anymore. Competition is fierce among vendors that have found themselves selling commodity products with shrinking margins.

Sales representatives have become more creative in influencing purchasing decisions. How can you counter their maneuvers and misstatements?

Consider what happened to Allison. She was vice president of technology planning at a company with almost 1,000 IS staff members. The development units reported on a dotted-line basis to the corporate CIO and on a solid-line basis to their respective business executives. A move to client/server required selecting hardware servers and database and development tools.

Allison's peer, a vice president who ran the data center, made it clear he would be happy only with hardware from his existing vendor, Vendor A. Vendor A considered Allison's company a stellar account, and the word went down to the account representative that he couldn't lose it. The data center head and the vendor representative immediately set to work creating an elaborate presentation that included performance characteristics, economic value analysis and references from other customers. Allison didn't have the resources to do the same level of analysis with other vendors. And when word got out that the data center head had made up his mind, Vendor A's competitors decided it was a lost cause. They stopped returning Allison's calls, and she wound up with only a token analysis comparing the offerings. You can guess who won.

TODAY'S COUNTS

By beating Allison to the hardware choice, Vendor A and her peer unfortunately eliminated some of her database choices as well because of operating system incompatibility. But that didn't stop one of the salesmen for a database vendor (Vendor B) from pitching Allison's company.

The database company had decided to release versions of its product for Vendor A's platform only after those for other operating environments were released. Yet Vendor B's presentation made it appear that all versions would come out more or

less at the same time. Because of inherent limitations in operating environments, the version of Vendor B's software for Vendor A's platform would have limited functionality. Rather than mention that in his show-and-tell session for Allison's group, the Vendor B representative described in great detail the functionality that would be available in the "next version." After all, he couldn't be held responsible if the engineering department didn't follow through, could he? Although Allison's group eventually went with a different vendor, it looked like a



much closer horse race than it really was and required lots of additional analysis.

SCHMOOZING FOR SALES

Things weren't much brighter on the development tools front. One of the major contenders (Vendor C) put on a full-press campaign with the directors of development and their respective business executives, giving them tickets to sporting events, lunches and trips to reference installations. Because the developers were geographically dispersed, Allison wasn't aware of this activity.

Allison's team selected Vendor D's tool kit after an extensive evaluation. But the development directors were solidly in Vendor C's camp. The CIO, seeing the folks who would actually use the tool kit strongly in favor of Vendor C, sided with the directors. By the time Allison found out about Vendor C's tactics, it was too late. She then had to deal with a demoral-

ized staff who felt all their hard work was for nothing.

Judgment call: What could Allison have done to avoid being outfoxed by the vendors? The first problem was the behavior of her colleagues. She and the CIO should have planned an announcement of the project that would have carefully defined the roles of each participant. They needed a mechanism to ensure that their views were carefully considered, but it should have been clear that fact-gathering and analysis would be done strictly by Allison's team. Vendor A would have had to deal with her directly.

In dealing with Vendor B, the basic rule is to base a comparison on what's on the market, not future releases. But that isn't always possible with a rapidly developing technology, which client/server was at the time. When that's the case, any claims of future release functionality should be confirmed in writing by the vendor's CEO, who should always be platform-specific. Vendors may not live up to their claims, but by taking these steps, at least you'll have some legal ammunition if things go south.

Allison was savvy enough to know that she couldn't bar all vendors from the company, especially in the remote locations. But she could have drawn up a "code of vendor conduct" that included a clause prohibiting vendors from calling anyone in the company without her knowing about it. That way, she could have found out what had transpired and re-emphasized the importance of neutrality. This code should have been discussed with the vendor's senior executives, not just local or regional sales management. ☐

Allison's column deals with the kinds of people issues that managers face every day but are reluctant to discuss openly. Each column is based on real-life situations. The names and certain circumstances are changed to protect confidentiality. Allison is a director at Truxex, a management consulting firm in Burlington, Mass.

Separated at birth?



Sun and SAS Institute. Related? We might as well be. For the 7th year in a row, Sun is the open systems platform of choice for SAS® software users. Together, we deliver proven applications and the most current and innovative technology this side of anywhere. A combo that results in real business solutions, like the SAS Scalable Performance Data Server™. It allows customers to take full advantage of scalable SMP architecture in their data warehouse, and it's only available on Sun. SAS Institute and Sun also jointly staff Customer Technology Centers to give SAS software the full potential of Sun™ systems. So you have the ultimate products and solutions for your diverse business environment. Which is, after all, what this alliance is all about. To find out more, contact us at www.sun.com/sepcw or www.sas.com. **THE NETWORK IS THE COMPUTER™**

SAS
SAS Institute Inc.



©1997 Sun Microsystems, Inc. All rights reserved. Sun, Sun Microsystems, the Sun Logo, and The Network is the Computer are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries. SAS and Scalable Performance Data Server are trademarks or registered trademarks of SAS Institute Inc. (SAS) or a registered trademark of SAS Institute Inc.

Introducing a new breed of **UNIX** s



Optim
for Internet C

SCO UNIX Servers

SCO The Santa Cruz Operation, the SCO logo, SCO OpenServer Software and the Optimized for Internet Computing icon are trademarks or registered trademarks of The Santa Cruz Operation, Inc. in the USA and other countries. UNIX is a registered trademark of The Open Group in the U.S. and other countries. All other trademarks are the property of their respective owners. This may change, time of change is hereby notified. SCO products mentioned on this SCO OpenServer CD-ROM are under the terms and conditions specified in the usage agreement on the CD-ROM.

Yes, I am interested.

For your FREE copy of SCO® OpenServer™ or SCO UnixWare®,
check out our website today. Or call 1-800-SCO-UNIX, Dept. 725.



Name _____
Title _____
Company _____
Address _____
City _____
State _____ Zip _____
Phone _____ Fax _____
E-mail Address _____

☐ SCO OpenServer

☐ SCO UnixWare

Optimized
for Internet Computing


SCO
www.sco.com

725000

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO 17 SCOTTS VALLEY

POSTAGE WILL BE PAID BY ADDRESSEE

SCO

1800 Green Hills Road, Suite 200
Scotts Valley, CA 95066-9930



ervers for a new way of computing.

ized omputing

Internet computing. It's about using the tools of the Internet to revolutionize the way your enterprise does business. But it takes a supremely robust server operating system to make Internet computing a reality. UNIX[®] technology has always been the power behind the Internet. Now we've Internet optimized the world's most popular Intel[®]-processor-based UNIX servers for business computing. Leveraging the scalability, reliability, and interoperability critical for building the bulletproof Internet, intranet, and extranet solutions that can propel your enterprise into the next millennium. Prove it to yourself. For your FREE[®] copy of SCO[®] OpenServer[™] or SCO UnixWare[™] systems, check out our website today. Or call 1-800-SCO-UNIX, Dept. 725.

www.sco.com/servers




SCO

and product names are or may be trademarks of and are used to identify products or services of their respective owners. The Santa Cruz Operations, Inc. reserves the right to change or modify any of the product or service specifications or features described herein without notice. The product summary is for information only. Software license agreement. Use of the software is solely for educational and non-commercial purposes. The license to use the software is free, however there is a charge for the media, too (if applicable), and shipping and handling. ©1998. (patent registered) SCO OpenServer license is coming soon, check with SCO for availability.



WANT TO GET MORE WORK
OUT OF YOUR WORKSTATIONS?

 It's two in the morning, you're on your third espresso shot, and suddenly that big idea dawns on you. Question is, can your UNIX® workstation bring it to life?

With enough memory it can. Fortunately, there's never been a better time to fuel up. That's because Kingston® Technology, the world's leading memory company, has dramatically reduced their prices. Kingston UNIX workstation memory costs nearly half as much as the leading system manufacturer's and our memory is customized to the requirements of the

system or class of systems in which it will be used. So you will always get the right memory (guaranteed 100% compatible) the first time around. We even have licensing agreements with

Sun Microsystems® and Silicon Graphics®, plus service agreements with Digital® and IBM®.* To get the memory that's just right for your UNIX workstation,

call (800) 435-0669, or look for us on the Web. After all, isn't it time your workstation lived up to its name?

Kingston
TECHNOLOGY

For more information call us at (800) 435-0669



Visit our Web site: <http://www.kingston.com/cw.htm>

*IBM will no longer provide maintenance service during the warranty period on the RISC 6000 family of products. IBM will, however, continue to provide maintenance service on these products during the post warranty period (after the usual one-year on-site warranty). Kingston Technology Company, 17800 Newhope Street, Fountain Valley, CA 92708 USA, (714) 435-2600, Fax (714) 435-2699. © 1997 Kingston Technology Company. All rights reserved. Kingston is a registered trademark and Computing Without Limits is a trademark of Kingston Technology Company. All other trademarks and registered trademarks are the property of their respective owners.

Buyer's Guide

REMOTE ACCESS GETS OVER THE HUMP

By Amy Malloy



FOR A TECHNOLOGY that had only a few users a couple of years ago, remote access has taken off, landing on the right side of success. Hectic travel schedules and widespread telecommuting have spurred corporate users to lean on information systems professionals for more than just basic electronic mail and file transfers from remote locations. Users want every file, application, multimedia amenity and Internet capability from the office desktop to arrive at a remote site in a speedy and reliable fashion. And they're getting it.

One of the challenges managers face is deciding which of many products — all of which take different approaches to perform the same tasks — will best fit their office environments. Because a remote access server is a popular way for IS to provide connections to the home office, *Computerworld's* Information Management Group conducted a telephone survey of 200 remote access server users to get a sense of users' satisfaction with remote access technology and the vendors that offer it.

Remote access, page 86

OVERALL SATISFACTION

Users rated their vendors on a scale of 1 (not at all satisfied) to 5 (very satisfied)

■ Cisco (21)*	4.33
■ IBM (17)	4.12
■ Ascend (11)	4.00
■ Shiva (46)	3.91
■ U.S. Robotics (10)	3.90
■ Digital (10)	3.60
■ All vendors (200)	3.94

*Number of respondents

Take charge of your with this **FREE** tool

<http://careeragent.computerworld.com>

Use these **FREE** features at <http://careeragent.computerworld.com>

- Search for specific learning resources
- Describe your training and education interest areas
- Optionally receive email updates of new learning resources that meet your interest areas
- Describe your current or ideal I.T. position
- Assess your skills relative to the skills required for that position
- Calculate a personalized "skills gap" to compare your fit to that position
- Record work experience for use in skills assessment
- Define goals for later use in career planning

And if you're an I.T. manager concerned about staff retention, you'll want to check out the "about Careeragent" button also at <http://careeragent.computerworld.com>. Here you'll see how a corporate training agent will help your entire staff learn the learning style that works best for them. As a manager, you'll be able to see how your staff's learning style compares to the learning style of the most successful I.T. professionals. As a manager, you'll be able to see how your staff's learning style compares to the learning style of the most successful I.T. professionals.

New From:

COMPUTERWORLD

I.T. skills & training

Search Thousands of Course Listings From:

Learning Tree International
Wave Technologies
Hewlett-Packard Educational Services
Boston University Corporate Education Center
Interpersonal Technology Group
DPEC
Business Communication Review
American Research Group (ARG)
IKON
HOTT (Hands on Technology Transfer)
NIIT, Incorporated
The Center for Systems Management
New Horizons Computer Learning Center of Boston
Sybase/Powersoft Education
ESI International



**CAREER
AGENT**
careeragent.COMPUTERWORLD.com

REMOTE

ACCESS

RELIABILITY

Users rated their vendors on a scale of 1 (not at all satisfied) to 5 (very satisfied)

Cisco	4.57
IBM	4.35
Ascend	4.27
Shiva	4.22
U.S. Robotics	4.13
Digital	4.00
All vendors	4.20

PERFORMANCE

Cisco	4.48
U.S. Robotics	4.20
IBM	4.12
Ascend	4.00
Shiva	3.73
Digital	3.70
All vendors	4.01

EASE OF USE

IBM	4.24
Cisco	4.05
Shiva	3.98
Ascend	3.91
U.S. Robotics	3.70
Digital	3.60
All vendors	3.91

CONTINUED FROM PAGE 83

Within this portion of the remote access market, more than 30 vendors and even more products were mentioned by respondents. But analysts predict the market will expand in the near future. Bobbi Murphy, chief analyst at Dataquest in San Jose, Calif., says remote access servers are "where the hub business was a few years ago. A lot of the smaller players have been forced out, and that is going to continue," leaving the larger companies fighting for market share.

The survey found that respondents like their remote access vendors; they gave their vendors generally favorable ratings. Yet sustained confidence in these vendors, while still respectable, drops off. Many users say they are afraid their server technology won't meet their remote access needs as they grow.

When asked about future plans, the majority of respondents said they plan to adapt existing tunneling protocols. And although analysts predict the outsourcing market will take off in the next few years, users said they are satisfied for now with their in-house solutions. Only a small percentage of respondents said they want to outsource remote access.

Overall, the majority of respondents manage one to three remote servers that are accessed by 50 or fewer employees who connect to the server via analog dial-up lines.

The average respondent has used the remote access server for two years, and the majority of employees who access the servers are individual dial-in users. In general, respondents said they are satisfied with their vendor's reliability, performance, ease of use, manageability, security and support/service.

Computerworld focused on the industry at large and the six most frequently mentioned vendors: Shiva Corp., Cisco Systems, Inc., IBM, Ascend Communications, Inc., Digital Equipment Corp.

and U.S. Robotics Corp. The latter three were mentioned by respondents less than half as many times as the others. These vendors all have significant market share, as do Bay Networks, Inc. and yCom Corp., according to Dataquest market research. But Ray and yCom weren't mentioned enough by users to warrant inclusion in our results. (A merger between U.S. Robotics and yCom is pending.)

All six vendors kept their heads above water in these user ratings, as did the market in general. No vendor dipped below a mean mark of 3 on a scale of 1 to 5, in which 1 means "not at all satisfied" and 5 is "very satisfied." Vendors sluffed positions in the satisfaction ratings, scoring higher in some categories and lower in others.

OVERALL SATISFACTION

Cisco came out on top in overall satisfaction and received high satisfaction ratings in other categories, finishing first or second in all seven.

Cisco's strong company and support offerings are just two of the reasons respondents said they chose this vendor. And success with other Cisco products prompted several others to choose the vendor for remote access. "Cisco is starting to have a huge market share; it's a strong company across the board," says Kitty Weldon, an analyst at The Yankee Group in Boston.

One Cisco user, who asked to remain anonymous, says the vendor has a way to go before it deserves a No. 1 ranking as a remote access vendor. He says Cisco needs to work on compatibility with other vendors and offers no outstanding features. But he says he plans to stick with Cisco because he would rather not adjust to a new vendor.

RELIABILITY

When key employees try to access crucial data on the system at headquarters from distant hotel rooms, the importance of reliable remote access servers

becomes obvious. Yet users said they are happy with their vendors in terms of reliability. All the vendors did well in this area, with a mean score of 4.20, the highest of any category. Users ranked Cisco first and IBM second in this category.

Digital scored lower than other vendors in this area, and one Digital user put reliability on his list of desired improvements. "It seems as though there are problems with trying to manage several full-speed connections at once. We experience throughput problems and delays, and connections are dropped from time to time," says Ralph Droms, associate professor of computer science at Bucknell University in Lewisburg, Pa.

PERFORMANCE

Vendors also scored high marks for performance. Only 54% of the total respondents complained of bottlenecks. Where they did report bottlenecks, most tended to blame slow modems. "I imagine it will get better. Users are pretty frustrated," Weldon says. Acceleration technologies such as Powerburst from Shiva claim to ameliorate speed problems by caching frequently used data.

Although accelerators may improve speed, as Weldon points out, information can only move so quickly over analog lines.

As users adopt more multimedia applications and telecommuting gains favor, speed requirements will only increase. The question is, "How are you going to keep their users happy at lower speeds as you are pumping more and more data down?" says David Samuels, a network project manager at Monsanto Co. in St. Louis. He says he worries about meeting user needs with the speed now available in the remote access world.

Even if managers worry about satisfying their users in the long run, respondents said so far they get good performance out of their servers. U.S. Robotics ranked right below Cisco in performance, and several users cited the quality of the vendor's modems as one of the reasons they picked U.S. Robotics. One user mentioned that the modems can handle many different kinds of modems.

EASE OF USE

With all technology products, simplicity scores big points with users. Remote access is no exception. As Weldon says, "ease of use is a big draw" with remote access server users. IBM displaced Cisco in the No. 1 spot in ease of use, and Cisco ranked second in this category. Shiva scooped up to third place, the highest ranking it received in

Software solutions

For some companies, remote access servers aren't the answer, and software-oriented technologies make more sense. The two major players in the remote access software world are Microsoft Corp., with its NT Remote Access Services, and Novell, Inc., with NetWare Connect, according to Dan Merriman, vice president at Cigi Information Group in Cambridge, Mass.

In those scenarios, the user reaches the home site through a dial-up link to a modem pool, which connects to the Windows NT- or NetWare-based server. Merriman recommends that when you are choosing between a hardware and software remote access solution, look at the skills of the employees implementing and managing remote access connectivity.

For instance, people who are more familiar with network device such as routers and hubs may prefer a hardware

solution. And operating system and server-oriented people may favor software solutions, Merriman says.

But if a company decides to go with a software solution, it's important to recognize the scalability issues, Merriman says. Supporting T1 and Integrated Services Digital Network lines on the software side is a problem, he says. Merriman says scalable software solutions are emerging and will be more generally available later this year.

—Amy Malloy



SYSTEMS AND
NETWORK SUPPORT

CRITICAL
SYSTEMS SUPPORT

INTERNET/INTRANET
SERVICES



HP SERVICES AND SUPPORT

Are you managing your computing environment, or is it managing you? At HP Services and Support, we believe solving problems isn't enough, we actually try to prevent them. That's why we offer a complete spectrum of computing services: consulting, financing and asset management, outsourcing services and, of course, comprehensive services and support. To see the whole picture, visit us at www.hp.com/go/service.



**HEWLETT®
PACKARD**

REMOTE ACCESS

CONTINUED FROM PAGE 88
any category.

MANAGEABILITY

This is another area in which IBM took the lead among respondents. Almost every IBM user surveyed said they picked IBM because they are an IBM shop; the choice cures compatibility headaches and simplifies management. Many Cisco users chose their vendor for the same reason. Digital and Shiva scored on the low end in this category.

SECURITY

With highly skilled hackers populating the globe, security concerns rank high at most companies. Remote access—which allows outside users to work as if they were local—opens up companies to unauthorized access and mischief. The managers surveyed appeared satisfied with their server's security features, but fears linger. Ascend shot up to the No. 1 spot in customer satisfaction with its server. Ascend supplements the security package offered by most vendors by fully integrating an optional firewall with its server.

But meeting security needs isn't always easy. Even though insufficient security isn't a complaint of his, Tom Gillingham, a computer support specialist at Allied Capital Advisory Inc. in Washington, says he would like to deal with fewer passwords. Gillingham says he would like to use a password on Windows NT to get into the Shiva system

because he prefers NT's security.

Some users were a bit more vocal in their complaints about security. "The security setup leaves a lot to be desired," says John Briggs, a programmer/analyst at Viro Corp. in Rockville, Md., who uses a Digital Voo server running network access software.

Briggs says part of the problem is the authentication database; the fact that it is external imposes restrictions on authentication. Murphy says security problems will diminish in the next year with the emergence of tunneling protocols, which offer increased security.

More than half the respondents say they will consider products that support Point-to-Point Tunneling Protocol (PPTP), which helps to build virtual private networks. There are other protocols in development that will require support by remote access servers as soon as this year. They include Layer 4 Forwarding (L4F), which offers a standards-based tunneling mechanism for transporting link-layer frames of high-layer protocols, according to the developer, Cisco; IP Security, designed to protect client protocols of IP by providing cryptographic security services in the network layer, according to the Internet Engineering Task Force; and Layer 4 Tunneling Protocol—a combination of PPTP and L4F.

SERVICE/SUPPORT

When systems fail, managers want service at their fingertips. Naturally, man-

agers would rather avoid having to explain to employees why they can't connect to the home office. According to the survey, vendors don't always meet users' service needs. The overall scores were lower in this category than any other. Cisco maintained a high score, as did U.S. Robotics.

Shiva and Digital placed second to last and last, respectively, for support. When Gillingham's Shiva service agreement came up, he bought a set support plan. Somewhere along the line, Shiva lost record of this service agreement. Gillingham had to prove the validity of the contract by scrounging up check stubs. After some annoyance, the two fortunately ironed out the problems.

FUTURE CONFIDENCE

Looking ahead, the respondents expressed less than enthusiastic confidence in their solutions in the next three years. But Cisco stayed on top with future confidence. U.S. Robotics, which moved around a bit in other categories, came in right below Cisco on future confidence ratings. Respondents cited scalability and flexibility as reasons for continued confidence in these two vendors.

Other vendors scored lower in this category. IBM ranked second in overall satisfaction, but it slipped down to last in future confidence. Users said their company's growth was one of the reasons for lack of confidence, saying they can't expand the system they use. □

MANAGEABILITY

IBM	4.38
Cisco	4.14
U.S. Robotics	4.10
Ascend	3.91
Shiva	3.78
Digital	3.60
All vendors	3.87

SECURITY

Ascend	4.27
Cisco	4.25
IBM	4.24
U.S. Robotics	4.20
Digital	3.70
Shiva	3.63
All vendors	3.84

SERVICE/SUPPORT

Cisco	4.38
U.S. Robotics	4.11
Ascend	4.10
IBM	3.65
Shiva	3.44
Digital	3.40
All vendors	3.72

Users rated their remote access servers on a scale of 1 (not at all confident) to 5 (very confident) based on how they think the servers will meet their organizations' needs in the next three years.

THE FUTURE

Cisco	4.00
U.S. Robotics	3.90
Ascend	3.88
Digital	3.22
Shiva	3.09
IBM	2.94
All vendors	3.20

The outsourcing epidemic

Network computers from users in hotel rooms unable to connect to the home office. No more beefs from telecommuters with dropped connections. No more ports. No more vendors. No more remote access. Sounds nice, doesn't it? Dumping the entire outsourcing process into someone else's lap would eliminate a few headaches, but IS doesn't seem ready to part with the aspirin bottle just yet.

Security fears, equipment and training investments and lack of trust in outsourcing keep IS holding on to remote access. Analysts predict that in the next couple of years, IS will loosen its grip, but, for now, 80% of our surveyed respondents say they don't want to outsource remote access.

The managers surveyed by Computerworld are reluctant to outsource because they like the control, are anxious about security—one user asks whether the outsourcer could be trusted—and want to leverage their in-house expertise. These managers interested in outsourcing name time and money savings and decreased responsibility as the perks.

"I think everyone thinks that outsourcing will happen, but it hasn't happened yet," says Bobbi Murphy, chief analyst at Dataquest. "This [remote access] is a very natural application to want to outsource," she says. Murphy predicts business-oriented remote access service offerings will start this year but will take off between 1998 and 2000.

Kelly Whilden, an analyst at The Tennen Group, agrees. Part of the problem of getting users to adjust outsourcing is that they "don't realize they have good options," the explains. If users don't know there are good outsourcing, they won't choose to relinquish that task, but without users going to outsourcing, the providers can't get the message out. "It's a chicken-and-egg scenario," she says.

Determining to outsource, such as money already invested in equipment and the training already given to employees, keep companies from considering outsourcing. Whilden explains. But over time, the obsolescence of this equipment may lead companies to reevaluate the decision to keep assets on-site in-house, Whilden says.

Mancoske is among the companies open to outsourcing. David Samuels, network project manager at Mancoske, says the company takes the view that "anything that's feasible to outsource—let's outsource it."

At least one respondent didn't fare as well with outsourcing. When Universal Instruments Corp. looked into remote outsourcing with Sprint Corp., the Birmingham, N.Y.-based company found Sprint's service weak security and management reports and net cost effective, says Scott Ellsworth, telecommunications manager. The experience didn't turn off Ellsworth completely. "If I could provide the same level of service to my users [that they are getting through a remote access server], I would definitely look at it," Ellsworth says. —Amy Malloy

ARE ALL YOUR MIPS EATING THEIR KIDS?

ONCE YOU WERE WILLING
TO PAY FOR MIPS THAT DIDN'T
PULL THEIR WEIGHT. BUT NOT
IN THIS MILLENNIUM.

Many mainframe purchases are
based on Total MIPS — but Productive
MIPS are the real test of value.

Consider the Amdahl Millennium
family of CMOS-based servers — S/390
compatible mainframes that deliver
more Productive MIPS per dollar than
any other CMOS-based server. Bar none.

Millennium's extraordinary value
derives from its unique high-efficiency
design. Unmatched caching with up to
30 times more capacity for optimum
processor utilization. Flexible parti-
tioning for load-matched resource
allocation. Plus many more innovative
ways to keep MIPS hard at work —
handling the mission-critical workload
of your business.

Interested in servers with a stronger
work ethic? Talk to Amdahl.

Contact us at
(800) 223-2215 or
www.amdahl.com

amdahl
BRING US YOUR HARD PROBLEMS™

Amdahl is a registered trademark and Millennium and S/390 (both marks) are trademarks of Amdahl Corporation.
IBM is a registered trademark of International Business Machines Corporation. All other trademarks are property of their respective owners.

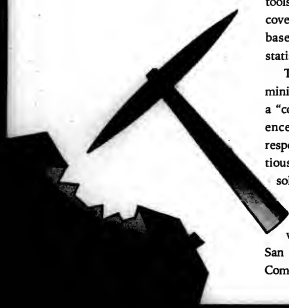
Vendors Compete in Data Mining Face-Off

Event targets executives with real-world business-focused solutions

Data mining has traditionally been viewed as a collection of exotic statistical methods and eerily biological processes. But a new generation of software tools has started helping business analysts discover knowledge hidden in corporate databases without having to master the art of statistics or be expert in artificial intelligence.

To further demystify the process of data mining, last month five companies engaged in a "competition" in which they told an audience of IT professionals how they would respond to hypothetical RFPs from two fictitious companies with problems that could be solved by a data mining solution.

The five vendors made their recommendations at the Data Mining Face-Off, which was held at the Fairmont Hotel in San Francisco. The event was sponsored by Computerworld and TBI, an IT consulting firm.



One RFP was for Rondell Sporting Goods Inc., a rapidly growing chain of sporting goods stores that is having a hard time managing its growth and is facing many problems. It needs to add networking and web management products to support its online mail-order business. It needs to evolve its existing data marts into a data warehouse. It wants to expand into Canada and Europe, but needs a better understanding of the diverse demographics it would serve. It also needs a predictive analysis system to leverage its customer profile data and to more thoroughly test the market potential for several new products.

How did the five vendors answer?

DataMind Corp., San Mateo, Calif.

In its presentation, DataMind noted that the first step in arriving at a solution would be to identify Rondell's business requirement. "In addition, we need to look at the architecture," said Ram Srinivasan, director of product marketing at DataMind. "We don't limit them to any one hardware platform. We also do a data audit, as there are usually some characteristics like demographic data that are not part of their system. As a result, we can give some recommendations on how they might employ the first discovery prototype."

DataMind proposed a three-part solution consisting of business scoping (auditing the business and determining what data can be accessed and incorporated into a model), building a live discovery prototype and building an enterprise discovery system prototype.

The company offers two tools for this process. DataMind Professional Edition allows a user to create and analyze models from a database. DataMind Data Cruncher is an enterprise version that allows teams to build and analyze models and share their results with one another.

The solution is proposed including consulting and software, but no hardware. DataMind gave costs of \$25,000 for the business scoping process and \$100,000 for building the live discovery prototype, but said that the cost for the third phase would need to be determined later.

HyperParallel, San Francisco, Calif.

HyperParallel, which designs "solutions frameworks" for specific industries, offers nine frameworks for retailers (for functions like inventory selection, price management and site selection). These frameworks include various algorithms such as neural networks, induction, clustering, affinity, and spatial analysis.

During its presentation, the company proposed a four-step solution: 1) Estimate the overall value data mining could bring to Rondell; 2) Use its frameworks to see if knowledge discovery could add measurable value; 3) Perform a rough analysis of potential savings; and 4) Meet with key line managers associated with the project to understand how they make their business decisions.

William Nowacki, vice president of marketing for HyperParallel, said the company would price its solution based upon the frameworks Rondell required. (Its pricing included neither the hardware to run the applications nor the services from third-party companies.) He said that Rondell would require its frameworks for Site Selection (\$100,000; used to identify the best location for a store); Local Store Assessment (\$150,000; determines optimal product mix for a store); Channel Management (\$100,000; helps determine which products are best for different channels of distribution); New Product Intro (\$100,000; helps determine prices and promotions for new products); and Data Mart Modeler (\$25,000). HyperParallel then added 33% for services associated with each of these frameworks, bringing the total cost to \$641,000.

IBM Corp., Somers, NY

IBM proposed a solution that included all the hardware, software and services Rondell would require. Two options were offered. The first would consist of IBM doing the work at Rondell, while IBM would take into account hardware (SP2); software (Business Discovery Solution, Intelligent Miner, and DB2/PE). Total cost would be \$2 million.

Option 2 would consist of IBM doing the work in Dallas at its SP2 lab, with remote access from Rondell, then port the relevant software over to Rondell. The cost of services and use of hardware for this approach would be \$1 million, plus Rondell would pay for whatever hardware and software it needed later.

In either case, IBM's four-phase recommendation included 1) analyzing the current marketing decision process; 2) developing an integrated data management strategy; 3) developing a data mining prototype; and 4) developing a decision support system.

"Most of the companies in business intelligence concentrate on data warehousing, data mining or decision support because of their size or their background," said Evangelos Simoudis, vice president of Global Business Intelligence Solutions for IBM. "IBM's strength is in providing a complete solution."

NCR Corp., Dayton, Ohio

NCR Corp. proposed a four-step process based on its RightStart data warehouse offering: 1) Develop a data mining infrastructure; 2) Provide the OLAP tools for ad hoc querying and reporting; 3) Provide tools for analytical modeling or general insight; and 4) Provide tools for knowledge delivery and refinement, or continuous insight.

According to Tej Anand, director of Knowledge Discovery at NCR, generalized insight extracts information from specialized insight (which is a specific answer to a question, such as a report generated from an OLAP query) so it can be used for other related questions. Generalized insight is stored in the form of a model, and integrated back into the data so that companies can find new answers on an ongoing basis for what is termed continual insight.

NCR has developed two tools to facilitate this process: Knowledge Discovery Workbench, which employs a visual programming environment to help an analyst extract new insights from a database; and Management Discovery Tool, a manager's front end for analyzing a business.

"Since Rondell is a retailer and part of its core competency is to have the right product at the right store, they need generalized insight so they can forecast by product, by day and by store and bring in the right products," says Anand.

The solution NCR proposed would cost \$650,000 to \$1,350,000, which breaks down into \$500,000 to \$1 million for the data warehouse, \$50,000 to \$150,000 for Management Discovery Tool, \$50,000 to \$150,000 for Knowledge Discovery Workbench and \$50,000 to \$250,000 for consulting services.

Torrent Systems, Cambridge, Mass.

Torrent Systems offers an environment, called Orchestra, that enables applications and databases to run on top of parallel hardware. It is designed to build scalable applications quickly and supports decision support, data mining and batch-oriented data processing.

Torrent's response to the RFP was presented by Knowledge Discovery One (KDI), an Austin, Texas, company that has partnered with Torrent. The company creates finished applications incorporating data mining algorithms.

KDI suggested building a data mining application that runs on top of Orchestra on the server, and a client side interface for making queries and viewing results. The application would consist of four components: a handler (moves data to and from the database); a processor (manages processing of the data); a loader (manages models in the knowledge base); and a front end (provides the GUI).

"Our approach is to inject as little trauma as possible," said Joe Dalton, president of KDI. "When you bring the application to our server, the clients do not know the difference. For Rondell, we would create the application templates, and they could dial in and hit that over the Internet. We would do business scoping, target the result, run the discoverer on our application and create the knowledge base. Rondell could hit using our front end."

KDI priced this approach at \$150,000 for a three-month proof of concept. It would include on-site project management, focus sessions, data extraction, data center processing and a 25% credit for a KDI software license at the end of the trial.

Participating Vendors:



It doesn't matter if you're a
CEO, a CIO or a CFO.
When you lose access
to your data, you're
just plain S.O.L.

A computer system that's down can mean a business that's belly up. Because once the data stops flowing, so does the revenue.

In a recent IBM study, 90% of businesses surveyed suffered some form of system failure. Often, the results are catastrophic. For example, of those in banking whose outages lasted more than two days, one quarter suffered immediate bankruptcy, almost half went bankrupt in two years, and virtually all failed within five years.

Vision Solutions can prevent this sort of debilitating system failure from affecting your mission-critical applications. We're the global leader in Tiered High Systems Availability for the IBM AS/400. Which means we can give you mainframe availability, reliability and scalability at a fraction of the cost.



For more details about the advantages of Tiered HSA, call us at 800-683-4667. To calculate the potential devastating impact of downtime on your business, visit the Vision Solutions web site.



www.visionsolutions.com

READ FOR PROFIT

Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ Last Name _____
 Title _____ Company _____ E-mail address _____

Address _____ City _____ State _____ Zip _____
 Address Stream: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price \$1.00/issue *U.S. Only. Canada \$25, Mexico, Central/South America \$150, Europe \$275, all other countries \$300.

Please complete the questions below.

1. **BUSINESS/INDUSTRY** (Circle one)
- 11. Manufacturer (other than computer)
 - 30. Financial/Accountant/Editor
 - 31. Medical/Life/Science
 - 40. Wholesale/Retail Trade
 - 50. Business Service (except DP)
 - 60. Government - State/Federal/Local
 - 70. Communications Systems/Public Utilities/Transportation
 - 80. Plant/Construction/Professional/Refining/Agriculture
 - 90. Manufacturer of Computers, Computer-Related Systems or Peripherals
 - 95. Systems Integrators/VMS, Computer Service Bureau, Software Planning & Consulting Service

2. **TITLE/FUNCTION** (Circle one)
- MANAGER/ADMINISTRATOR**
- 11. Chief Information Officer/Vice President/Asst. VP SVP/VP
 - 21. Dir./Mgr. MIS Services, Information Center
 - 31. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN/Plg./PC Mgr., Tech. Planning, Administrative Services
 - 41. Dir./Mgr. Sys. Development, System Architecture
 - 51. Programming Management, Software Developer

3. **ENGINEERING, SCIENTIFIC, R&D, Tech. Management**
- 11. President, Owner/Partner, General Mgr.
 - 12. Vice President, Asst. Vice President
 - 13. Treasurer, Controller, Financial Officer
- CORPORATE MANAGEMENT**
- 11. President, Owner/Partner, General Mgr.
 - 12. Vice President, Asst. Vice President
 - 13. Treasurer, Controller, Financial Officer
- DEPARTMENTAL MANAGEMENT**
- 11. Sales & Mktg. Management
 - 12. Medical, Legal, Accounting Mgr.
- OTHER PROFESSIONAL MANAGEMENT**
- 11. Information Counselor/Librarian, Educator, Journalist, Academic
 - 12. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase (Circle all that apply):
- Operating Systems**
- (a) Select: ☐ No ☐ Yes ☐ OS
 - (b) Network: ☐ No ☐ Windows NT
 - (c) DOS: ☐ No ☐ Windows
 - (d) Unix: ☐ No ☐ Mac/Temp
 - (e) Asst. Development Products: ☐ No ☐ No
 - (f) Networking Products: ☐ No ☐ No
 - (g) Internet Products: ☐ No ☐ No
4. Which of the following products do you use, specify, recommend or approve the purchase of (Check all that apply):
- (a) Internal software: ☐ No ☐ No
 - (b) External software: ☐ No ☐ No
 - (c) Internal hardware: ☐ No ☐ No
 - (d) External hardware: ☐ No ☐ No
5. Do you use the Internet? ☐ No ☐ Yes

COMPUTERWORLD

BAE7 Y

READ FOR SUCCESS

Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ Last Name _____
 Title _____ Company _____ E-mail address _____

Address _____ City _____ State _____ Zip _____
 Address Stream: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price \$1.00/issue *U.S. Only. Canada \$25, Mexico, Central/South America \$150, Europe \$275, all other countries \$300.

Please complete the questions below.

1. **BUSINESS/INDUSTRY** (Circle one)
- 11. Manufacturer (other than computer)
 - 30. Financial/Accountant/Editor
 - 31. Medical/Life/Science
 - 40. Wholesale/Retail Trade
 - 50. Business Service (except DP)
 - 60. Government - State/Federal/Local
 - 70. Communications Systems/Public Utilities/Transportation
 - 80. Plant/Construction/Professional/Refining/Agriculture
 - 90. Manufacturer of Computers, Computer-Related Systems or Peripherals
 - 95. Systems Integrators/VMS, Computer Service Bureau, Software Planning & Consulting Service

2. **TITLE/FUNCTION** (Circle one)
- MANAGER/ADMINISTRATOR**
- 11. Chief Information Officer/Vice President/Asst. VP SVP/VP
 - 21. Dir./Mgr. MIS Services, Information Center
 - 31. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN/Plg./PC Mgr., Tech. Planning, Administrative Services
 - 41. Dir./Mgr. Sys. Development, System Architecture
 - 51. Programming Management, Software Developer

3. **ENGINEERING, SCIENTIFIC, R&D, Tech. Management**
- 11. President, Owner/Partner, General Mgr.
 - 12. Vice President, Asst. Vice President
 - 13. Treasurer, Controller, Financial Officer
- CORPORATE MANAGEMENT**
- 11. President, Owner/Partner, General Mgr.
 - 12. Vice President, Asst. Vice President
 - 13. Treasurer, Controller, Financial Officer
- DEPARTMENTAL MANAGEMENT**
- 11. Sales & Mktg. Management
 - 12. Medical, Legal, Accounting Mgr.
- OTHER PROFESSIONAL MANAGEMENT**
- 11. Information Counselor/Librarian, Educator, Journalist, Academic
 - 12. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase (Circle all that apply):
- Operating Systems**
- (a) Select: ☐ No ☐ Yes ☐ OS
 - (b) Network: ☐ No ☐ Windows NT
 - (c) DOS: ☐ No ☐ Windows
 - (d) Unix: ☐ No ☐ Mac/Temp
 - (e) Asst. Development Products: ☐ No ☐ No
 - (f) Networking Products: ☐ No ☐ No
 - (g) Internet Products: ☐ No ☐ No
4. Which of the following products do you use, specify, recommend or approve the purchase of (Check all that apply):
- (a) Internal software: ☐ No ☐ No
 - (b) External software: ☐ No ☐ No
 - (c) Internal hardware: ☐ No ☐ No
 - (d) External hardware: ☐ No ☐ No
5. Do you use the Internet? ☐ No ☐ Yes

COMPUTERWORLD

BAE7 Y



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 558 MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 558 MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



In Depth

BROTHER, CAN YOU SPARE A PARADIGM?



Match the breathless quote to the world-changing technology

BY MIKE CUENCA Soon after humans learned how to use tools, they began trying to predict what kind of tools they'd be using the day after tomorrow.

Such predictions are generally made with gusto and hyperbole. For example, the Duke of Wellington made this prediction after he heard about the invention of the steam engine: "I see no reason to suppose that these machines will ever force themselves into general use."



Why do we mention this now? Because with (choose one: the World Wide Web, "push" technol-

ogy, Java, all of the above) poised to (choose one: create a new paradigm, change the way we do business, change the way we think about the world), sometimes it's a good idea to remember that (choose one: nothing's new under the sun, you've heard all this before).

Admittedly, sometimes people are right about the future. But it seems that more often they're wrong. You'd think people would have learned their lesson

by now and would have quit with the grand pronouncements about tomorrow's technology.

They haven't. Take the *Computerworld* technology predictions quiz, and see if you can match the prediction with the technology.

DIRECTIONS: Match the quotation with the innovation or technology that prompted it. Answers, caveats and mea culpas are on page 95.

THE TECHNOLOGIES

- TV
- The interstate highway system
- Fiber optics
- Interactive multimedia
- OS/2
- Internet
- WordShop operating system

THE QUOTES:

● "Much to the embarrassment of those who as prematurely as 10 or 15 years ago proclaimed that [] was 'around the corner,' their solution has proved singularly complex, time-consuming and, to those who have not had to foot the bill, fascinating. In retrospect, however, such difficulties hardly seem surprising, since the potential of [] truly represents an unprecedented challenge to the human imagination."

● "Somewhere along the line this diamond got dropped in the mud, and now it's sitting on somebody's desk who thinks it's a dirt clod. Inside that dirt clod is still a dia-

Brother, page 95



"Wait honey,
I'm almost done
with the

Connector.

Connector? It looks like a computer. Well, not to someone from AMP, because, as the world's premier connector company, our people have been stretching the concept of connectors. Usually thought of as pieces of plastic and metal sitting between cables and circuit boards, connectors are being redefined. We're broadening their definition to include entire signal paths. For example, we see the one between a keyboard and the computer screen as one long connector. This broader definition is the basis for our future direction. By building on our traditional strengths, we've added technologies that fit into our vision — technologies like sensors, switches, optoelectronics, circuit boards, and wireless components. And today, we're bringing these technologies together to create proven connectivity systems that our customers can incorporate into their designs, helping them reduce costs and speed their product development. So while not everyone would think of a computer as a connector, our customers benefit because our people do.

AMP Incorporated, Harrisburg, PA 17105-3808. Contact your regional center: USA 1-800-522-6752, Canada 905-470-4425, United Kingdom 44-1753-678833, Singapore 65-422-0211, Japan 81-44-813-8532.

www.amp.com

AMP and Connecting at a Higher level are trademarks



BROTHER, CAN YOU SPARE A PARADIGM?

CONTINUED FROM PAGE 93

mond, but they don't see it." []

● "We don't think they will necessarily want to give up the familiar for pull-down boxes and symbols." []

● "In this regard, when [] was still in its planning stages, a lot of builders... other than the federal government were stimulated to make elaborate plans to interconnect with [] even before it was built."

● "The situation is often compared with a high-speed train leaving a station, with passengers sprinting along the platform trying to hop aboard. The problem is, no one knows where the train is headed." []

● "While theoretically and technically [] may be feasible, commercially and financially I consider it an impossibility, a development of which we need waste little time dreaming."

● "In many fundamental ways, [] will change the way we view our world, just as the Copernican Revolution did."

● "What makes [] a surprise is the speed with which it has caught the public fancy."

● "Our unity... is sustained by free communication of thought and by easy transportation of people and goods. The ceaseless flow of information... by individual and commercial movement over a vast system... crisscrossing the country." []

● "The [] not only deserves preparation, it absolutely demands it. One reason is that, as noted, nobody is in charge."

computer that is far less good than it should be."

● **OS/2.** Andre Peterson, executive director of marketing at WordPerfect Corp., was comparing OS/2's user interface, IBM's Presentation Manager, to DOS. The quote is from the September 1988 *Nation's Business* (In fairness, Peterson also said WordPerfect was developing a more graphical user interface).

● **The interstate highway system.** Aha, a trick question! That quote is actually about the Internet, but the interstate highway system was the example used by Vice President Al Gore in a March 1993 interview in *National Journal*.

● **Interactive multimedia.** In the introduction to a December 1993 *New York Times* article exploring the technology's future, writer Calvin Sims also wrote that "no one

knows what kind of services people will be willing to pay for on the emerging 'information superhighway,' and even the most zealous developers acknowledge that they are being driven by pure instinct."

● **Television.** Lee De Forest, the inventor often called (albeit controversially) "the Father of Radio," uttered this bit of understandable jealousy in 1926. The quotation is from *The Book of Predictions*.

● **Fiber optics.** That's Vice President Gore again. He wrote that when he was a senator from Tennessee and co-chairman of the Congressional Clearinghouse on the Future in *The Futurist* in 1991. Gore was listing some of the technology advances that would make possible his "information superhighway."

● **Television.** Writer Lou Frankel in a 1946 column in *The Nation* that brings to mind the similarly unexpected explosion in traffic on the Internet during the mid-1990s. He also wrote that "either FM or television will tend to kill the [radio] broadcasters' existing audience."

● **The interstate highway system.** President Dwight D. Eisenhower said this in a 1955 special message to Congress in which he requested support for his plan to help the states complete the highway network.

● **The Internet.** Book reviewer L. R. Shannon, writing in *The New York Times* in October 1993. □

Cumera is assistant professor of visual communication at the University of Kansas' William Allen White School of Journalism and Mass Communications in Lawrence.



THE ANSWERS:

● **Television.** Jack Gould, radio editor at *The New York Times*, made this assessment in *The New York Times Magazine* in March 1947.

● **The NextStep operating system.** That was Steve Jobs' description of his doomed operating system in a sometimes bitter one-on-one interview with Bill Gates in an August 1991 issue of *Forbes* magazine. In the same interview, Jobs said, "I still think that tens of millions of PC owners needlessly use a

ILLUSTRATION BY JEFFREY M. HARRIS

MORE POWER TO YOU

What's new about COMDEX and WINDOWS WORLD is what's new about technology. It's the next generation of network computing, Internet, groupware, Windows NT, and every other technology for connected computing. It's everything that's new from over 1,000 exhibitors, and over 100 conference sessions designed to show you where business, technology and understanding converge. And for the first time, the world's #1 IT events are being held alongside cutting-edge shows in consumer electronics and telecommunications. The rest is up to you. You can read the reviews after it's all over. Or you can turn on the power of convergence right now.

 **COMDEX**
Spring '97

 **SPRING
CES**

 **WINDOWS
WORLD '97**

 **EXPO
COMM
USA 97**

GO ONLINE TO REGISTER www.comdex.com

Or call 617 449 5554 and enter code 70. Have your fax number ready — we'll fax your registration form within 24 hours!

IT Careers

Dead skill? Not on your list! Cobol skills are in huge demand and drawing fat salaries.

For veteran programmers, it's...

PAYBACK TIME

BY DAVID WELDON

CALL THEM the undead. Long accused of clinging to a "dead skill," experienced Cobol programmers have suddenly risen to new life.

In the past six months, Cobol has emerged as one of the most sought-after—and hardest-to-find—skills in the industry. The average salary offer for a mid-level programmer has jumped \$5,000 to \$10,000. And a dozen years of experience is projected to bring a salary as high as \$100,000 by year's end.

"The demand is starting to skyrocket right now," says Charles A. Muller, a professional information systems recruiter at A/R/M Professional Services in

Troy, Mich., and also a former Cobol programmer.

If you want them, you'd better offer a good career deal. "In the past, companies didn't have to worry much about the career development of mainframers," Muller says. "Now, companies are having to say, 'Here's our career development plan for you. Here's what we will do for you. We'll rotate you. We'll train you.'"

Bill Robinson spends a lot of his time at job fairs lately. And he usually leaves empty-handed. "I can't seem to find anyone with one, two, three years of [Cobol] experience," Robinson says.

As IS project manager at The MarMax Group in Framingham, Mass., which operates the Marshall, Inc. and T. J. Maxx retail clothing chains, Robinson desper-

ately needs Cobolers. In an IS department of about 250, MarMax has 45 openings, including 25 for Cobol programmers. "Many of these vacancies have been open for some time," Robinson says.

The biggest needs at MarMax are for midlevel programmers to fill out understaffed project teams. But the inability to find them has forced the IS department to hire more experienced programmers, "scale back projects and look sooner at new technologies," Robinson says.

To help the effort, the company offers up to \$10,000 more in salary than it did six months ago and occasionally uses sign-on bonuses to lure the right candidate. As a result, it is wrestling with salary adjustments for other IS jobs.

Still, it's not enough to protect the existing staff against body snatching. "We've lost a fair number of people," Robinson says. "A few to other companies and some to consultants."

Janice Love knows too well the risk of having experienced Cobol programmers lured away with promises of quick cash. She'll soon be counting on it.

As president of People Unlimited Consulting, Inc. in Charlotte, N.C., Love heads a consultancy that specializes in SAP, network and year 2000 staffing. Like most year 2000 consultancies, People Unlimited has a sharp eye out for experienced Cobol programmers.

"It's getting real, real hard," Love says. "We're getting more aggressive. We're trying to get employer lists from companies. If we can find them, we can have them. Finding them has been the issue."

Love says Cobol programmers are "wising up" to the market and their new earning potential. She is seeing many "retired" Cobol programmers reemerge. These veterans are looking only for a large paycheck. "It's strictly a case of, 'Show me the money,'" Love says.

KEEPING THEM AROUND

Assigning Cobol programmers to existing projects is a critical retention tool at Frontier Communications in Bingham Farms, Mich. It wasn't always that way.

With 75% of the company's work still done on mainframes, the hiring needs are for systems maintenance, says Jerry Bonello, director of integrated business solutions at Frontier. But "you can't hire a \$40,000 person. You have to hire a \$55,000-to-\$60,000 person who has at least 17 years of experience to do the same job," he says.

To keep programmers happy, the company is opening up new opportunities. "We're putting more emphasis on getting some of the folks who have been here a while experience with other technologies—C++, object languages, intranets and electronic commerce," Bonello says. □

Weldon is Computerworld's senior editor, IT Careers.



THE COBOL HIRING COMPETITION

Whether it's for legacy systems maintenance or Year 2000 conversion projects, the percentage of IS managers looking for Cobol talent is growing



YOUR POWER RESOURCE



WITH RHN CONSULTING, YOU'RE ON SOLID GROUND.

...solid and experienced. So why is your career up in the air?
...solidly, you find the right jobs for you.

...solid commitment, dedication and experience to find contract
...solidly suited to your needs. We are a division of
...solidly in the US, Canada and Europe. You can rest
...solidly that you're in the right position in the right location.
...solidly the leading benefits package, including
...solidly vision, holiday pay and a first-rate advanced
...solidly program.

...solidly then. Contact us today and let our Staffing Specialists
...solidly want to be.

RHN CONSULTING*
IT Technology Professionals

Call us at 800-260-1906 www.rhn.com

Take
Information
Technology
in New
Directions



As the 1996 recipients of the prestigious Gartner Group "Excellence in Technology" Award, Capital One is forging ahead with revolutionary applications for IT. We have created one of the world's largest Oracle databases and are harnessing the awesome power of an information-based marketing strategy to explore new avenues for using IT.

• COBOL PROGRAMMERS

We are looking for experienced programmers with 2 or more years of experience in COBOL/COBOL II, IBM mainframe application programming, JCL, OS/VS, VSAM, Assembly and Easytrieve. Knowledge of CICS and IMS is a plus.

If you are eager to join a challenging and stimulating environment, fax your resume to: (804) 567-1483 or e-mail to: careers@capitalone.com. Please reference job code EADJCW19. For more information, visit our Web site at <http://www.capitalone.com>

Capital One is an equal opportunity employer.

CapitalOne.

www.capitalone.com

Join a
PREMIER
Oracle
Development Company



in beautiful
SOUTH FLORIDA



INFORMATION TECHNOLOGISTS

Average 80 degree temperature... sunny weather... beautiful beaches... vast cultural activities. If this does NOT describe where you are living, then you are not at the right place! Precision Response Corporation is not a consulting company - we work to deliver the best tele-services information in the business. Companies of all varieties knew the value of outsourced tele-services. When looking for the best in the industry, they choose Precision Response Corporation. Our clients include leaders in the Fortune 500 who demand excellence in both products and services. To meet their challenges, we strive for constant innovation to improve our delivery system. Exciting integration techniques deliver quick, targeted information to our customers - techniques designed and developed by our elite staff of Information Technologists.

With our Client/Server infrastructure and continuous investment in the best tools available, PRC is where you can contribute on complex projects and see your ideas become leading-edge solutions. If you don't want to put on layers of clothes, shovel snow, or drive on ice slicked roads, yet want to utilize the latest in ORACLE tools, the time to make your move is now! We have openings in the following areas:

TELECOMMUNICATIONS - OPERATIONS

Environment is Lucrative Technology: 63R PBX (Definity), ARIAT Intuity, DSX, T3, T1, TDAX, DSU/CSU, CM5/CAS, Conversant (DVR). Positions available are: PRC Analysts • Telecom Managers

DEVELOPMENT

All positions require experience in the following: Oracle 7.2, Forms 4.5, Reports 2.4, SQL, SQL*Developer 2000, Developer 2000, RAD/3AO, advanced CASE tools. Positions available are: • Director of Development • Group Manager • Development Project Managers • Sr. Programmer/Analysts • Business Analysts • Sr. QA Analysts • QA Team Leader • QA Manager • Data Analyst

Work on tomorrow's solutions TODAY! Come join us and build your future with the leader in outsourced tele-services solutions in an industry that continues to grow. Please mail/fax your resume to: Technical Recruitment Director, Precision Response Corp., 1313 NW 367 Street, Miami, FL 33149, FAX (305) 816/2277. Or E-mail a plain, ASCII text file (MS Word) to: pprc@worldnet.att.net

PRC

Precision Response Corporation

INTEGRATED MARKETING SOLUTIONS

SAP

ALL
MODULES

1975 North Park Place
Atlanta, GA 30339
404-599-9550
770-955-1714
FAX: 770-937-0433

**STRUCTURED
LOGIC
COMPANY, INC.**
SAP NATIONAL

**TCI, WHERE
TECHNOLOGY &
BUSINESS MEET.**

At TCI, you'll join a company of experts focused on delivering high quality, innovative, cost-effective information technology (IT) services and products. As an employee of TCI, you can expand your technical skills and business acumen while enjoying the stimulation that comes from working with the best. We hire and retain outstanding people by following our philosophy of providing a stimulating work environment that is also respectful of the commitments of our employees.

TCI offers competitive salaries, attractive benefits, and vacation assistance. For consideration, send resume in call **800-625-4024**.

TCI TECHNOLOGY
TECHNOLOGY INC.

P.O. Box 25256
Louisville, KY 40252-0529
FAX: 502-394-9250
http://www.tci.net

Manager Technology Services (864-524-6422)

Provide leadership and necessary linkage between all district operations concerning the application of technology including in the instructional setting. Submit resume or nomination by 6/15/97 to:

Dr. Robert J. McCand
Clark County School District
2815 East Hastings Road
Las Vegas, Nevada 89121
Questions: 702-799-5434

NEC/IT/EN



SAP

RECRUITING MANAGER

Spearhead System Consultants, a fast growing worldwide consulting firm and a leading SAP National Implementation Partner is in search of a Recruiting Manager for their New York based operations. Qualified candidates should have a minimum 5 years of technical recruiting experience preferably in an SAP environment or with similar products. Duties will entail organizing and managing an industry leading recruiting force as well as developing the procedural and technical infrastructure. Compensation will be commensurate with experience level as well as performance based. Spearhead offers a comprehensive and competitive benefits package. For immediate consideration please forward your resume ASAP to:

SPEARHEAD SYSTEM CONSULTANTS (US) Ltd.

99 Seaview Blvd., Suite 340
Port Washington, NY 11050-4632
Attn: David Eganby #607
888/SPEARHEAD
516/625-9000 voice
516/625-9687 fax
spear1@vnetramp.com
www.spearhead.com
SAP® National Implementation Partner

55 Broad St. New York, NY 10004
212-968-1346 212-968-1348 fax 212-968-1352

spearhead™

PSC OUR STAFF MAKES US #1, WE NEED YOU TO KEEP US THERE!

We have immediate openings in Phoenix, Arizona for highly motivated and career oriented consultants with at least 2 years experience in one or more of the following:

- | | |
|------------------|---------------------------------|
| MAINFRAME | SYSTEMS/CLIENT-SERVER |
| • COBOL | • C/C++ |
| • SAS | • Sybase or Oracle DBA |
| • DB2 | • Web Developer - Java/CGI/HTML |
| • iSeries | • Visual Basic developer |
| • CICS | • Parallel/Rel. DBS |
| • Visual Basic | • Informatica |
| • iSeries | • Oracle Financials |
| • DB2 | • GUP/PC/Comm Developer |
| • DB2 DBA | |
| • Building/NCI | LAN/WAN |
| • COBOL | • Windows NT Help Desk Support |
| • ADAMAS DBA | • Unix Systems Administration |
| | • Novell Systems Administration |

PLEASE CALL, MAIL OR FAX RESUMES TO: Professional Software Consultants, Inc.

Paul Rosenthal
4747 N. 7th St., #434, Phoenix, AZ 85014
(800) 279-4498, Fax (602) 279-1161
pssc@192@aol.com

Member SBCS
& SPIC Society

RPG Programmer

Frankfurt, Germany Learn Visual Basic

Requirements include a two-year degree in a computer-related field, one year professional experience designing and writing business database applications for AS/400 using RPG. Experience programming with Visual Basic 4.0 is highly desirable but not a must.

The computing environment includes state of the art hardware and software platforms including Pentium-based PCs, an IBM AS/400 500 Advanced Server, Cnet communications equipment, Novell Internet Ware and Pen-based Computers. In addition to an exciting work environment, the position offers a base salary of at least \$32,784, a 10% free living quarters housing allowance for eligible candidates, paid relocation costs, and an excellent benefit and leave package. There is a three-year, renewable contract. Resume including salary history must be received by May 18, 1997.

Send to: CPCS-Hospitality Structures, Attn: Mr. Chip LaFried, 2760 Eisenhower Avenue, Suite 400, Alexandria, VA 22314.

The Army Recruitment Machine Program is an Equal Opportunity Employer.

REGIONAL SCOPE

Colorado

IS professionals are increasingly drawn to Colorado's awesome scenery and slower pace of life. The growing numbers of IS employers are banking on it.

LOOK OF the LAND

By Tom Duffy

LARI ANDERSON relocated from St. Paul, Minn., to Denver in November, attracted by the shorter winters, access to a variety of outdoor activities and thriving job market.

At age 24, Anderson had already worked at Andersen Consulting for two years. If he had stayed at the consulting firm, Anderson says he soon would have begun earning significantly more.

Working through a pair of recruiters, Anderson had his pick of several jobs in Denver. He decided to take a job as a PowerBuilder applications developer at Petroleum Information/Dwights LLC, a data service provider for the oil drilling industry. By moving when he did, he got a 30% raise and his living costs stayed about the same. The firm paid his relocation costs but didn't offer him a signing bonus. "It went so smooth," he says.

Anderson says that he now works a strict 40-hour week in Denver. He was used to working up to 70 hours a week in St. Paul, a difference he attributes partly to the culture at his former employer. Also, he says, the approach to work in Denver appears to be less intense.

"Denver is a lot more relaxed environment to work in," Anderson says. "I just get this feeling that in the city in general and where I work, people value their recreation time more."

Despite the beauty of the region, information systems professionals, such as Anderson, can't be lured to the Rockies fast enough. Companies continue to be attracted to the area by the abundance of relatively inexpensive real estate, a well-educated workforce and a quality of life that makes it easier to attract workers from other areas.

That appears to be exactly what propelled Sun Microsystems, Inc., in Mountain View, Calif., to propose the construction of a 1 million-sq-ft. research and development facility in Broomfield, Colo., just north of Denver. The site is one of three new facilities being developed by Sun — the others will be in the Boston and San Francisco areas — and is expected to employ about 4,000 people when it opens late next year.

That's great news for the economy. But it's bad news for people trying to find workers to fill those positions. Many companies are looking far outside the region and even overseas to fill positions. Scouring the Internet, sponsoring visa applicants

and paying finder's fees to employers who give referrals are just a few of the more common strategies.

DENVER AND BOULDER

Cigna Systems, a division of Cigna Corp., an insurance firm in Philadelphia, is having so much difficulty attracting workers that it's paying signing bonuses and giving employees finder's fees of up to \$2,000 for helping to fill open positions. Diana Esquivel, site leader at Cigna's Colorado facility, says Cobol programmers are demanding \$80,000 a year, although they aren't always getting it.

"Cobol programmers are very difficult to find," Esquivel says. "The year 2000 work is eating them up. But technology generalists are very hard to find, too."

Like many firms in the area, Resource Net International, a paper-products distributor, must use recruiters to find candidates for many positions. "It took us about six months to find someone to fill a LAN administrator position," says John Elkins, a project manager. "The other area [where] we're having some challenges is EDI. The problem isn't a specific application, it's just been finding someone with EDI experience in general."

COLORADO SPRINGS

Colorado Springs, with a population of more than 300,000, lags behind Denver and Boulder in the number of information technology jobs, with about 20,000 positions open. But as home to MCI Communications Corp.'s software engineering facility and Federal Express Corp.'s Colorado Springs Technology Center, its stature far outweighs its small-town feel.

Firms there face the same difficulties in filling positions as they do in the Denver area, according to Ron Flynn, western regional technical recruiting manager at MCI. He says MCI recently studied its salary structure and raised the pay of some employees to help retain them.

Meanwhile, when shopping for new candidates, the company, like many in the area, has learned to move more quickly.

"If we get a hot candidate, we need to get on top of that immediately," Flynn says. "The shelf life of applicants is very short because of the demand." □

Duffy is a freelance writer in Somerville, Mass.

THE LARGEST IS EMPLOYERS

Telecommunications companies dominate the job market

Company	Location	Employees
MCI Communications Corp.	Colorado Springs	2,500
Lockhead Martin Corp.	Denver	480
Great-West Life & Annuity Insurance Co.	Denver	300
US West Communications, Inc.	Englewood	300
Federal Express Technology Center	Colorado Springs	285
First Data Technology	Englewood	255
Time Warner Cable	Englewood	250
Oppenheimer Shareholder Services	Denver	230
First Data Corp.	Englewood	230
Minerals Management Service	Denver	220

*Two sites

Source: Directory of Top Computer Locations

RESOURCES

User groups, professional associations and other online resources for IS job hunters

Rocky Mountain IS/IT Users Group
www.privnet.com/rocky/

Network Professionals Association, Denver chapter
www.scp.net/npa

Professional AutoCAD Users Group of Denver
www.paug.org

The Denver Post Online
(Includes help-wanted classified ads)
www.denverpost.com

APJLabs, recruiters for Denver area
www.apj.com/jobs/

Reduction Resources, Inc.
www.rtrworld.com

Matrix Denver Jobseekers Guide
www.sri.net/jobs

Avnet Marketing, Inc., real estate relocation and other helpful lifestyle and information listings

www.avnetmkt.com/market.htm

Colorado: A Homeowner's Manual, history, real estate, state offices, tips for high-altitude living and links to other Colorado Web sites
www.bethere.com/newcomer

There's a new name for opportunity in Denver.

Johns Manville is the new place for top technical talent in Denver. But we're not new. Formerly known as Schuller International, our company has been a leading manufacturer of building products for 140 years. If you're looking for a global company with a lot to offer, take a look at Johns Manville.

Senior Technical Specialist - UNIX/NT (Dept. 7009)

In this position, you will join a team of skilled professionals that provide installation and production support for our expanding set of distributed server platforms including HP/UNIX and NT as well as relational DBMS support for Oracle and SQL Server.

Required skills include installation and support experience with:

- HP/UNIX
- SQL Server
- TOV/P
- Windows NT
- Oracle

Background experience with the following is a plus:

- Internet Protocols
- Routers
- Firewalls

Advanced Programmer/Analyst (Dept. 6634)

In this challenging position you will provide production support for the Distribution Control System (DCS) applications. In addition, you will participate in the development and installation of enhancements to systems, coordinate production schedules with clients processing outsourcing vendor and internal applications groups, and work closely with the end user, both locally and remotely.

The successful candidate will have experience in:

- MVS, JCL, TSO/ISPF, COBOL, SAS, VSAM, Endevor, Xpediter/TSO, RDR/Recall, Placid, Control M, O and E.
- Distribution experience (DCS) a plus.

This position requires good verbal and written communication skills, the ability to work in a team environment and foster strong customer relationships, a bachelor's degree or comparable work experience, and a willingness to work overtime as required and provide "on-call" support as necessary.

Analyst (Dept. 7011)

This position will provide first level PC and File Server support, install PC hardware and software, provide prompt arrival and work closely with other groups to resolve technical issues. You will also provide adequate documentation and full administrative reporting requirements. Must be willing to be on call 24/24 as needed.

Requirements include a High School/Technical School education and 1-3 years of total computing experience. Must have in-depth knowledge of PCs, especially Compaq, including capabilities of CD ROM Drives, Hard Drives, Modems and other peripheral devices, working knowledge of laser jet printers, experience with Netware operating systems 3.12 and 4.1, and expert knowledge of DOS, Windows 3.1, Windows 95, Windows NT, VisiCalc, and Microsoft Office.

As an equal opportunity employer, Johns Manville strongly encourages qualified female and minority candidates to apply. We offer a competitive salary and benefits package and a non-smoking environment. If you have the enthusiasm and motivation to join this fast-paced, challenging business, please send resume along with your salary expectations to: Johns Manville, Attn: Human Resources, Dept. 7011, P.O. Box 653005, Littleton, CO 80165-3005 or fax to 1-303-324-0817.



Johns Manville

<http://careers.computerworld.com>



TALENT, TECHNOLOGY, TEAMWORK



Talented people, sophisticated technology and teamwork: this combination has maintained Interactive Business Systems' standard of excellence in the IT industry. Interactive Business Systems, Inc. is an international consulting firm with offices in 11 U.S. cities and the United Kingdom. We specialize in Year 2000 and SAP customized client services and high tech consulting. IBS is known as an enterprising, reliable resource for a broad spectrum of technical services, and our reputation has made us a preferred vendor with the most successful Fortune 500 companies.

As an industry leader, IBS is committed to developing exciting and innovative consulting opportunities. If you are a dedicated professional with 2+ years experience, we want to talk to you! IBS is staffing all areas of technical expertise. All positions are on a **Salaries or Per Project Basis**. We currently have special interest in the following:

- MAINFRAME PROGRAMMERS
- QA SPECIALIST/TESTER
- RDBMS
- ORACLE DEVELOPERS/ANALYSTS
- SERVICE DESKETS ENGINEER & TECH. SUPPORT
- UNIX, ITS ADMIN (ALL LEVELS)
- UNIX SERVER
- NETWORK GRAPHICS
- STRATA
- COMET ARTIMAS/ALPHI SYSTEM
- C++ ENGINE OR WINDOWS
- HTML/JAVA/INTERNET
- WEBPAGE DEVELOPMENT
- VISUAL BASIC

For consideration in the Colorado market, please contact:



Interactive Business Systems, Inc.

300 Union Blvd., Ste. 230, Lakewood, CO 80228
PHONE: (303) 965-1944 OR 1-800-355-8811 FAX: (303) 965-8103
E-mail: denver@ibsys.com

Denver, San Francisco, Chicago, Milwaukee, Cincinnati, Columbus, Dallas, Atlanta, Denver, Tampa, Richmond, London



Find training now.

Imagine the time saved if you could search one solid database of IT. Now you can by simply accessing Release 1 of CareerAgent: careers.computerworld.com

While you're there, check out the preview of upcoming CareerAgent releases. They'll allow IT professionals, individually or through corporate subscriptions, to assess learning styles, establish career goals, calculate individual, group and department skill gaps with an intelligent decision support system, and focus a training search based on priority.

The point? Every individual on your team has an idea of their career plan, and knitting these plans together can benefit corporate goals. Think about your current team today. Do individual career plans in your organization seamlessly benefit from available projects? Training resources? Corporate goals? Is this information connected to cost-effectively recruit and retain staff? It's all possible with CareerAgent, where management and staff can collaboratively to continuously develop a career "itinerary" for each individual. On the Internet or your intranet. Your choice.

For details, see careers.computerworld.com or call 1-800-343-6474, 24/000 today. And make every career on your team what it should be: a well-planned journey of enrichment.

THE
COMPUTERWORLD

CAREER AGENT
careers.computerworld.com

SOFTWARE OPPORTUNITIES

CIC, an Intel-based client/server database marketing company specializing in software products that allow marketers to access and analyze market data with the greatest efficiency and speed, has these new opportunities available due to expanded growth.

- Sales Test/Product Release Manager
- SW Specialist/Pilot Sales Support
- Product Marketing Manager
- Marketing Consultant/Analyst-SFSS
- Client Support-Help Desk

 **Customer Insight Company**
 a Network Company

Please mail or fax your resume to: 5670 Greenwood Plaza
 Blvd., Ste. 190, Englewood CO 80111. Fax: (303) 297-7708.
www.customerinsight.com

NATIONAL DISTRIBUTOR SERVICES, LTD.

National Distributor Services, Ltd. is the industry-leading provider of computer solutions to the construction equipment and material handling equipment distributors. Due to our growth, we have openings in the following areas:

- Customer Support •
- Field Installer/Dealer •
- CDDOL •
- IREX •
- Bulldozer •
- AGC •
- IS/6000 •
- Networking •

NDS offers a superior benefits package, including health and dental insurance, 401k plan and more.

National Distribution Services, Ltd.
 3023 South Parker Road, Suite 400
 Aurora, CO 80014
 email: nl@ndsl.com

MAKE SURE YOUR NEXT EVOLUTION TAKES YOU HIGHER

Soar To New Heights With Us.

We're Evolving Systems, the software development company that's leading the change in telecommunications systems worldwide with innovative operations support system products and solutions.

Products like our Local Number Portability Solutions that will enable people to have a choice of local telephone service supplier.

Our customers are the best in the industry — the biggest providers of local, long distance and wireless telecommunications services around the globe.

They demand to work with the best and so do we.

We're taking our customers into the 21st century with the development of a number of exciting, breakthrough technologies. To do this, we need software designers, engineers and analysts experienced in C++, Object Oriented Design, and Client/Server program development and support.

We give you the freedom to create.

To do this you need support, yet the independence to think freely and work on creative development solutions. At Evolving Systems, you'll find the

environment completely conducive to these needs with a network of fiber connected offices, windows, workstations and more.

Work on the best with the best.

Over 300 software development specialists are dedicated to Evolving Systems and our goal of providing "Success Every Time". There is a whole new world of telephony out there, and visions for the future are being brought to life at Evolving Systems everyday. We welcome you to come find out more about who we are and how you can take your career higher with us.

• Check out our website — www.evolving.com

• E-mail your resume or request more information: resumes@evolving.com

• Call: 303-682-1000

• Fax your resume: 303-682-1299



6892 SOUTH YOSEMITE • ENGLEWOOD, CO 80112

Start your day...



COMPUTERWORLD

The online connection for information technology leaders

www.computerworld.com



June 8-11,
1997

★
**Marriott
Rivercenter
Hotel**

★
**San Antonio,
Texas**

Call
1-800-488-9204
for info



**Reserve
your place**

November 12, 1997

For information: 1-800-488-9204

COMPUTERWORLD

100

Best Places to
Work Annual



Be a part of a team developing tomorrow's work environment.

Experienced IS Professionals:

- Programmer Analyst -**
- C/C++, Access, Delphi
 - 2000 conversion and installation systems to client server
- Product Development Analyst**
- Business Needs Analysis
 - Property & Casualty Insurance
 - Development tools
- Quality Assurance Specialist**
- User/Regression testing
 - Software Development
- DBS/Database Analyst**
- Informix or related database
 - Start and Boreas programming
 - Consultant analysis and design of the Decision Support System.
- Claims Programmer Analyst**
- Client Server development
 - PRC Claims
 - Analysis and design of client server based claims system
- Business Analyst**
- Object Modeling/Development
 - Documentation
 - Project Analysis/Design

With current technology trends turning to Client Server, Relational Databases and Object Oriented Methodologies, can you afford to overlook our opportunities?

Berkley Information Services is a growing, progressive property & casualty insurance services provider. We develop and service computer software for the regional insurance companies of the W.R. Berkley Corporation.

Our technology includes: Delphi, TMI, Informix, UNIX, HP9000, COBOL and Intranet.

We offer the opportunities associated with being a part of a large, focused and empowering corporation, the security of small town living, the convenience of being approximately 30 minutes from St. Louis, Falls, SD and a personal working environment. Additionally, we offer a casual dress code, flexible work week options, a comprehensive compensation & benefits package, and a real opportunity for motivated and confident individuals to gain the recognition and compensation that they deserve.

Programmer Analyst - Plan, develop, test & implement computer programs for processing and analyzing insurance data. Includes: design, development, testing, installation, and maintenance of computer programs. Includes: design, development, testing, installation, and maintenance of computer programs. Includes: design, development, testing, installation, and maintenance of computer programs.

Software Consultant - Consult with clients to determine their software needs and provide solutions. Includes: analysis, design, development, testing, installation, and maintenance of computer programs.

Systems Engineer - Design, develop, test & implement computer systems. Includes: analysis, design, development, testing, installation, and maintenance of computer systems.

I/S SECURITY & CONTINGENCY PLANNING SPECIALIST

What's important to you? At Menasha Corporation, integrity, honesty and security are much more than words. They're values that are ingrained in everything we do. And they're attributes we consider just as essential as experience. It's a security measure that has put us at the top. And it's creating tremendous opportunities for those who share our beliefs. We offer:

- Exciting New Technology
- Professional Growth
- Secure Work Environment
- Competitive Compensation
- Excellent Benefits
- Promotional Opportunities

We believe that **INTEGRITY** is just as important as **ABILITY**.

Located in Menasha, WI, this position will become part of a team providing support for our Corporate Information and Telecommunications Center. We will be responsible for the development and maintenance of a contingency plan for business and technical processes. This includes monitoring the adequacy and effectiveness of such plans. You will also be responsible for the development and implementation of comprehensive security policies, audit programs, and all data networking applications and interconnection systems. We are searching for one of the world's leading Enterprise Business Applications that include sales, distribution, manufacturing and financial modules. The ideal candidate will have a college degree and a min. of 4 years experience in Information Systems (contingency), planning, network security and advanced UNIX systems. Strong customer focus and excellent communication skills essential.

If you possess a successful track record and the ability to follow through, we would like to talk with you. Please submit resume to: Corporate Recruiter, Menasha Corporation, P.O. Box 387, Menasha, WI 54251-0387. We hold true to the principles of Equal Employment Opportunity and value the diversity of our work force.

www.menasha.com
www.Menasha.com

Why Sprint PCS?

- 1) A Clean State
- 2) A Unique Team
- 3) A Great Place to Live and Work
- 4) A Career Challenge



Business Analyst
Data Analyst
Data Architect I & II
Database Administrator (Oracle)
Manager, Applications Division
Manager, Client Services

Platform Engineers
Programmer/Analyst
Senior Programmer

St. Stephens Analyst/Project Leader
St. Stephens Engineer/Project Leader
Systems Engineer

Systems Analyst - P&B & Voice
Support Analyst
Systems Engineer

Software Test Engineer
Technologist

Sprint PCS offers an outstanding compensation and benefits package. If you have great job or challenge opportunities, then Sprint PCS may be able to share the latter with you. Send your resume to Sprint PCS, Dept. CSD90, P.O. Box 12545, HOCHSTADT/MOBILECOMM, Kansas City, MO 64112. You can fax your resume 365-550 to 1-800-480-2346. Or e-mail your resume to pcsjob@spntpcs.com (Internet World is Hiring) or PCS Job Opportunities by phone call, please. We are proud to be an M/F/V/H employer M/F/D/V. Also, we maintain a drug-free workplace and protect employment substance abuse testing.



Sprint PCS™

Senior Database Administrator 40 hours from home in San Jose, CA. In Oracle and Microsoft and Oracle. Develop and maintain database systems. Includes: design, development, testing, installation, and maintenance of database systems.

Programmer/Analyst to analyze the needs of business and government, research computer systems, test software, and develop and maintain computer systems. Includes: design, development, testing, installation, and maintenance of computer systems.

Senior Engineer - database San Jose, CA. Develop, design, develop, test, and maintain database systems. Includes: design, development, testing, installation, and maintenance of database systems.

Dakotah, Inc.

Dakotah, Inc. is seeking a Senior IT Manager, a Senior IT Analyst, and a Senior IT Support. The Senior IT Manager will be responsible for the overall management of the IT department. The Senior IT Analyst will be responsible for the analysis and design of IT systems. The Senior IT Support will be responsible for the installation and maintenance of IT systems.

Dakotah, Inc.

MANAGEMENT CONSULTING

**Our clients invest in
systems technology.
We protect these
critical investments**

As we continue to look beyond the Year 2000, Ernst & Young LLP is seeking Information Technology Consultants, at all levels, to provide technical and management leadership to our clients. Our professionals will architect practical solutions to complex business and technical issues. We seek individuals who possess the combination of technical, people and management skills needed to successfully complete systems development projects.

**SYSTEMS DEVELOPMENT &
INTEGRATION
Consultants, Senior Consultants,
Managers and Senior Managers**

We are seeking individuals at all levels within our consulting practice. Positions require the ability to work directly with our clients in a fast-paced, dynamic and challenging environment. Skills required include one or more of the following:

- Year 2000 projects in various technical environments:
 - MVS • AS/400 • UNIX and/or DEC VAX
- Client-Server/Object oriented applications development
- Business systems development
- Full systems life cycle development
- Package implementations skills in the following:
 - Oracle • BaN • PeopleSoft • SAP R/3
- Internet/web development, and strong project management skills

Cleveland • Pittsburgh • Detroit • Chicago • Cincinnati • Indianapolis • Columbus

Empower yourself to make an impact with one of the world's leading professional services firms. Travel is required. Forward your resume and location preference to: Ernst & Young LLP, Attn: EYDP, 500 Woodward Ave., Detroit, MI 48226, Fax: 313/596-1787, E-mail: etdusa.eycorp.com. No phone calls, please. Ernst & Young, an equal opportunity employer, values the diversity of our workforce and the knowledge of our people. Visit our website: <http://www.ey.com>.

ERNST & YOUNG LLP



Information Systems

- Programmer Analysts
- Systems Analysts

La Quinta Inc. Inc. is searching for candidates to work at our Corporate Headquarters in San Antonio, Texas. Successful candidates will be responsible for performing and designing program specifications as well as documenting, testing, and installing the implementation of application software. Qualified candidates must have a minimum of 3 years of programming experience using languages JCL, C and/or C++/C. Candidates must have experience programming in a UNIX environment and relational database environment using SQL, Informix, Oracle, or Sybase.

If you are interested in a challenging, fast-paced environment, please mail: fax your resume to: Donna Kroll, Human Resources, La Quinta Inc., Inc., 111 E. Pecan Street, P.O. Box 2636, San Antonio, TX 78294-2636, TEL: (210) 303-6399, FAX: (210) 303-6399. We are proud to be an Equal Opportunity Employer.



Made yourself at home.



September 21-24, 1997
Innovative Conference
Center & Resort
Suburban Denver, CO

**LEARN ABOUT
STRATEGICALLY ALIGNING
YOUR
I.T. WORKFORCE
AT THIS
EXECUTIVE SUMMIT**

1st Annual I.T. Workforce Executive Summit
Strategically Aligning the Enterprise I.T. Workforce™

WHO SHOULD ATTEND:

CIO's, VP's and Executives with budget responsibility for:

- I.T. Training
- Human Resources Development
- Organizational Development
- Career Development
- Strategic Workforce Development

THE ISSUES YOU WILL DISCUSS:

How effective is your organization at deploying I.T. staff? Providing I.T. training when it's needed? Developing and measuring staff contributions and their alignment to strategy? This executive level conference deals with all of these issues, including the related metrics, economic resource allocation, quantitative analysis and more. It brings together experts and practitioners who will address contemporary workforce development issues. Topics range from the impact of organizational structures on workforce development, to corporate and management responsibility for workforce development, to current workforce training and deployment practices. The focus will be on understanding the challenges facing the corporate world and on presenting practical, "best of breed" solutions. There will even be a hands-on case study. If you are a senior manager responsible for the I.T. workforce and its development, register today by calling the conference hotline at 1-800-488-9204.

800-488-9204

[illegible]

TECHNICAL SUPPORT *HyperView*, E. Design, develops and documents computer-aided design (CAD) data. Computer-aided research computing technologies for telescoping design and manufacturing are integrated & verified in manufacturing applications. Analysis tools are used to optimize design decisions to obtain reliability and performance. Designers can design flexible manufacturing systems needed to accommodate rapidly changing customer requirements. Computer-aided manufacturing design uses computer-aided design (CAD) data to design, test, and document shop systems & plant equipment. Designers can use computer-aided techniques to evaluate new computing technologies to improve manufacturing productivity. **SAULT INC.**, Masters Corp., 10000 Highway 101, Suite 100, Ashland, OH 44805. Tel: 419/283-2200. Fax: 419/283-2201. **TECHNICAL SUPPORT** *OLE*, network programming, OLE component architecture, OLE 1.0 & Windows 95, SAA-SPG, 400 E. 4th Ave., Seattle, WA 98101. Tel: 206/461-1000. Fax: 206/461-1001. **TECHNICAL SUPPORT** *Computer Services Inc.*, Ash Janssen 190 Ash Janssen Dr., Ash Janssen, OH 44805. Tel: 419/283-1777. Fax: 419/283-1778.

[illegible]

Electrify your career...

with Florida Power Corporation, in St. Petersburg, on Florida's sunny Gulf Coast

Manager of Software Development (HVL-CW1-123)

Provide management for technical design, develop and implement strategies for application software development & support. Consult with corporate managers & directors on the application of information technology. Plan, control budget, and schedule multiple projects. BS + 8 years relevant experience.

Manager Network Services & Client Support (HVL-CW1-109)

Provide planning & management for workstation, network, and telecom. field support including PC, voice, data, video, PBX, ACAD, VHS, wireless, microcomputers, and fiber. Coordinate activities with IT management and vendor units. BS + 6 years exp. PC, network, telecommunications preferred.

Account Manager (HVL-CW1-122)

Provide overall control of various customer unit operations & practices. Develop and communicate business unit IT strategy. Assist customers in evaluations of ITD services & products. Develop service level agreements, monitor customer expectations, coordinate product development. Advanced exp., 5 years in both IT & electric utility operations. Advanced degrees preferred.

Technology Planning (HVL-CW1-125)

**Find
training
now.**

careerpoint.com/pubs/etw01

ORACLE

Requires strong C++ or Visual C++, Unix, Oracle, or SQL experience. Your warehousing background is a plus.

Marquette Tech, M/S Recruiter
Best Buy Co., Inc.
P.O. Box 9312
Minneapolis, MN 55440-9312
Fax: (612) 947-2806
E-Mail: cmah@bestbuy.com Best Buy has offices: (612) 947-2500

Total Opportunity: Pay/hourly Employee © 1997, Best Buy Co., Inc.

COMPANIES/INDUSTRIES

MANAGER OF

IT Resource Analyst/Team Lead (HVL-CW1-901)
Lead IT staffing, recruiting, technical training & staff development projects. Strength in process development & documentation. Flexible, hands-on, multi-tasking team player with excellent communication skills. High profile project direction, strong liaison to team members. Working knowledge/exp. in IT technical environments. BSBA & 4 years relevant exp. Excellent communication skills required.

Application Development Analysts (HVL-CW1-07X)
HS, entry to 2 years exp. Consulting, analysis, design, construction, implementation, & support of application programs. DB2, COBOL, VS Cobol II, C++, VBA, etc. Strong communication skills. BSBA & 4 years relevant exp. Excellent communication skills required.



Careers
CAREER WORLD
SERVICES

<http://careers.computerworld.com>

INFORMATION SERVICES

We are a rapidly growing United States Company (EEO M/F) in Chicago's western suburb seeking a Manager of Information Services with strong executive knowledge in the following areas:

- Reporting to the Vice President of Information Services, this position will have a staff of selected 10 professionals within state agencies in the process of meeting the challenges of information delivery in a rapidly changing and competitive environment.

The successful candidate will have experience managing projective development projects and addition of vendor supplied packages. A minimum of 5 years experience with VA's systems and 2 years supervisory experience required. In addition, strong knowledge of the use of microfilm and microfiche, experience with a personal file, PC programming knowledge using BASIC and FORTRAN.

Mail or fax your resume, including salary history and requirements, to: The Pampered Chef, Attn: Vice President, 159 S. Butterfield Road, Addison, IL 60101. Fax 630-431-2100.

An Equal Opportunity Employer

The Pampered Chef logo, featuring the words "THE" and "CHEF" in large, stylized, outlined letters, with "PAMPERED" in smaller letters between them. Below the logo is a small registered trademark symbol (®).

Systems & Networking Support
 BBS & 2 years support are included.
 • **Oracle Data (PWL-CR1-088)** - Administration, maintenance, design, installation, integration & tuning; database strategy development, ClientServe, MVS, HP-UX, Netware, Windows NT, DSG, DB2.
 • **IMS Data (PWL-CR1-089)** - Administration, maintenance, design, installation, integration & tuning; database strategy development of IMS Poleson 12.0 & 12.5.
 • **LANMAN Expert (Senior level) (PWL-CR1-124)** - Analysis, design & test, ClientServe environments, LANMAN, SCNET, SCSA, Eshernet, Titan Ring, LUTT DSG & CC (ad news), RSG, DSG, P/SP/SP, SPAN, SHAW, HP-UX, Linux, MS-DOS, Windows, Netware 386.
 • **Systems Management & Support (PWL-CR1-092)** - Novell, UNIX, TCP/IP, NT Servers, E-mail, printing & backup support, ESE, Advanced, Remedy, Thit, Operavox, TCP/IP.

FPC provides a competitive compensation/benefits package & a dynamic, team-oriented environment encouraging the use of new tools & technologies. For consideration, please utilize the proper渠道 when submitting your resume to: Florida Power Corporation, Dept. PWL/CN, P.O. Box 14600, Jacksonville, FL 32212-0462. Fax: (913) 864-4832. Internet: <http://www.fpc.com> E-mail: fcba@fpc.com (913) 869-5527. EOE.

[illegible][illegible]

IT CAREERS

YEAR 2000
We see a Bright
Horizon Ahead

As the global leader in Millennium planning and update services, we are prepared to address the worldwide market with our Ardis 20™ business process solution and the unparalleled expertise of our consultants. Join us today and enjoy a future of challenge and growth. We have positions available nationwide including:

Senior Consultants

Candidates should have a working knowledge of PC's and mainframe environments. Strong analysis skills, design and testing background. Experience in COBOL, Assembler, DB2 and other languages. Strong time and project management skills along with good communication skills needed.

Principal Consultants

Candidates will possess ability to manage large scale projects from planning to implementation. Solid communications skills and experience with mainframe and PC applications needed.

Programmer's

Candidates will need experience in an IBM mainframe environment with COBOL, CICS, JCL, and IBM utilities. Strong time management skills and good communication skills needed.

DATA DIMENSIONS

Please send or fax resume to:
Data Dimensions, Inc., 10900 NE 4th St.
Suite 2000, Bellevue, WA 98001
Fax: (206) 688-1099
Email: 72733.1762@compuserve.com
We are an Equal Opportunity Employer

Three-Stage Programmer/Analyst (Clark, NJ) sought to develop large-scale computer applications using C++ and Java and Visual Basic to enhance on-line Internet or intranet or office intranet. Frequent interaction with end-users. Requirements: Masters in Computer Science. Will accept completion of all requirements for Masters degree in lieu of degree. One year experience in large-scale Internet development. Must be willing to travel to various client sites throughout the U.S. Salary: \$62,000/yr. Hours: 40 hrs./wk. (8am - 5pm, M-F) Please send resume and salary history to: 70217, PO Box 15188, Boston, MA 02114.

GIS Analyst Analyze

project requirements. Plan, coordinate and provide support for GIS projects. Design and develop GIS applications and databases. Bachelors degree in Civil Engineering or the Physical Sciences and 2 years of experience in GIS and its applications required. Must have knowledge of Oracle, Visual Basic, Intranet/ MCGI, and object oriented design. Send Resumes to: Paul J. Gill, Roy F. Watson, Inc., 1 Watson Way, Westchester, PA 19380. Accn. GIS Analyst.

SOFTWARE ENGINEER

Job Title: Design, develop and test computer software for business applications; analyze software requirements to determine feasibility of design; direct software systems testing procedures and personnel in PowerBuilder 4.0, Oracle 7.0, Visual Basic 3.0, System Architect 3.0 and Sysbase 10.0. **Requirements:** Knowledge of PowerBuilder 4.0, Oracle 7.0, Visual Basic 3.0, System Architect 3.0 and Sysbase 10.0. **Master's Degree in Computer Science or related field with 2 years experience.** Bachelors Degree and 5 years experience) as software engineer or computer programmer. **Salary:** \$70,000/year. **Working Conditions:** 8 a.m to 5 p.m. 40 hours/week. **Apply:** Fernholm & Associates, 300 S. Main Drive, Pittsburgh PA 15206. Me #702567

SOFTWARE ENGINEER

Duties: Design, develop, test and install computer programs for business applications; analyze software requirements to determine hardware requirements to design, direct software system testing procedures using experience in SQL, Windows, PowerBuilder 4.3, Visual Basic, and Microsoft Access; install, test, and maintain Windows and Windows NT.

SQL Requirements: Knowledge of SQL, Windows, PowerBuilder 4.3 (development platform); SQL, Java (database); Windows SQL (language) and Visual Basic (programming tool); Bachelor's Degree in Engineering, Computer Science or related field and 3 years' experience as software engineer or computer programmer.

Salary: \$52,000

Working Conditions: 8 a.m. to 5 p.m., 40 hours/week; Annual Salary Review; Company Paid Health Insurance; 120 Mercedes Benz 1991.

1993 Salary: \$60,000

SOFTWARE ENGINEER

Job Title: Design, develop and test computer software for business applications; analyze software requirements to determine feasibility of design; direct assembly and testing of software; possess expertise in Sybase SQL Server, Windows NT, Visual Basic 4.0 and C.
Requirements: Knowledge of Sybase SQL Server (relational database), Windows NT (operating system), Visual Basic 4.0 and C (language); Bachelor's Degree in Computer Science or related field and 3 years experience as software engineer in computer program development.
Salary: \$45,000-\$55,000.
Benefits: Comprehensive, 401(k), 5 p.m. to 8 p.m. hours.
Apply: Pennsylvania Job Center, 2100 Wharton Street, Pittsburgh, PA 15202, MO 3911321.

COMPUTERWORLD

100

Best Places to
Work Annual

Energy (kWh)	1000	1000
Time (min)	100	100

Career Survey: Manufacturing Equipment

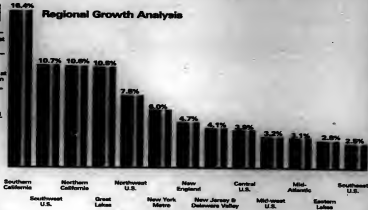
Industry Hiring Trends



Survey Base: 848 Technology Firms Involved in Manufacturing Equipment

Survey conducted between February 97 and April 97.

Regional Growth Analysis



CompTech, a directory publisher in Woburn, Mass., tracks the U.S. 48,000 technology manufacturers. This survey relates to the 31,042 tracked firms with fewer than 1,000 employees.

© Copyright 1997, Corporate Technology Information Services, Inc., Woburn, MA

<http://careers.computerworld.com>

Marketplace

NEW & NOTABLE

For information on
advertising,
call 203-857-5100



"Get Hergonized"

The New Catch Phrase in Space Management

Hergo's newest line of modular computer racks and enclosures which are specially designed to help organize all computer hardware, peripherals, communications equipment and 19-inch rackmounts used in any size computer room or technical environment.

These industrial-strength, custom-designed structures are space saving, expandable, easily reconfigured and easy to set up. Hergo racks provide cable

management and can be free standing or wall mounted/braced. Frames, legs and the support brackets of the shelves and desktops are made up of heavy-duty, industrial-strength II Gauge metal. Hergo frames have been rated to hold 2,500 lbs. and the mounting shelves to carry 325 lbs.

For computer professionals, MIS managers and network administrators who frequently modify their equipment and

computer systems to keep pace with changing technology and business requirements, Hergo modular racks are the perfect organizational and space management solution.

Contact Lisa Cunningham at Hergo Ergonomic Support Systems, Inc. at 75 Verich Street, New York, NY, 10013, Tel. (212) 634-4270 or (888) 222-7270 or Fax (212) 634-4275. So Get HERGONIZED today.

SoftReach to Offer the First LAN-Based Push Technology

SoftReach, a leading provider of Automated Information Delivery applications, announced the availability of

NetReach, the company's enterprise communications solution. NetReach is the first implementation of "push" technology for the LAN environment. The product uses a sophisticated network-based screen saver system and broadcast technology to improve communications throughout an organization utilizing existing local area network infrastructure.

As computers on your network become idle, multimedia presentation style slides deliver important information to each employee's desk. "The goal is to



instantly transform idle computers into valuable assets while improving the ROI in LAN infrastructure," stated SoftReach Vice President Steven Griffith. "NetReach does this without requiring new networking hardware, software or training," he added.

For more information about NetReach call SoftReach at (800) 331-1030 or visit www.softreach.com.

Computerworld Marketplace TechnoToys Sweepstakes

May 5
TechnoToy:

Times Data Link® Watch



A watch and organizer all in one. With the software included you can easily transfer information from your PC to your wrist.

Win one of 2 being given away!

By entering into the weekly TechnoToys giveaway, your name will automatically be entered into the year-end Super Prize Sweepstakes where you could win as much as \$25,000 in cash!

COMPUTERWORLD
An International Information Technology Leader

\$25,000
CASH

Fax this completed form, or all of the following information to: (800) 890-2299.

Yes, I want to enter to win a Times Data Link® Watch. Please also enter me in the end-of-year 1997 Super Prize Sweepstakes Drawing.

Name: _____

Title: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____

Fax: _____

email: _____

Are you currently a Computerworld subscriber?

yes _____ no _____ Issue Date: 5/5/97

No purchase necessary. All entries must be received no later than 11:59 pm (EST) Mon, May 12, 1997. Winner will be determined by a random drawing on or about 5:00 pm (EST) Mon, May 12. See official rules within the Marketplace section.

Gateway Delivers

Combine good, hard-working people and a bullish commitment to Value of Ownership. You get Gateway 2000. The *Fortune* 500 PC manufacturer planted on the South Dakota prairie. We deliver quality, high-performance PCs and award-winning customer service to computer users all over the planet.

Want to know more? Call us today. Your dedicated account representatives will tell you all about our desktop, portable and big screen PC/TVs. And about our company. It's a success story.



"You've got a friend in the business."®

8 8 8 - 8 8 8 - 0 3 8 2

www.gw2k.com

© 1997 Gateway 2000, Inc. GATEWAY 2000, the G logo and Value of Ownership, "You've got a friend in the business," slogan are registered trademarks of Gateway 2000, Inc.

Marketplace

For information on
advertising,
call 203-857-5100

Distinct NFS 95

Easiest way to Share Files, Programs and Printers



Highlights:

- Integrates seamlessly into Windows 95
- Mounts NFS drives from Explorer or Network Neighborhood
- Supports file and record locking
- Allows central authentication with a single server running PCNFSD for all NFS connectivity
- Prints to NFS or LPT printer servers
- Allows login to all systems with a single login name and password or different login names for each system
- Allows single-operation logout of all systems accessed through Network Neighborhood
- Fine tunes performance parameters for each server you access

Free
Evaluation Copy
Available at...



distinct

→ <http://www.distinct.com>
sales@distinct.com
Phone: 1-888-366-8933
Fax: 1-408-366-8153

Distinct IntelliTerm



Highlights:

- TNC270 Emulation-Models 2.3.4 and 5 (for IBM Mainframes)
- 31790 Vector Graphics & 3279536
- TMS250 (2x400, 27x132) (for AS/400)
- VT52, VT100, VT220, VT320 & VT420 emulation (for DEC and UNIX Systems)
- Customizable keyboard layouts, popups and session profiles
- VBA™ Advanced Scripting Language
- DDE, DLLAPI, EHLLAPI, WinLLAPI and Visual Basic™
- Available for Windows 3.11, Windows 95 and Windows NT

Free
Evaluation Copy
Available at...



distinct

408.366.8933
<http://www.distinct.com>
Fax: 408.366.8153
E-mail: cworld@distinct.com
Factsite: 408.366.2191

Sales & Rentals

- ✓ Printers
- ✓ Peripherals
- ✓ Copiers
- ✓ New
- ✓ Reconditioned with warranty



<http://www.dempsys.com>
e-mail: dempsys@dempsys.com

Dempsey
SYSTEMS

2134 Pineland Drive - Irvine, CA 92612-2206
Phone: (714) 475-3000 Fax: (714) 475-3029

Buy • Sell • Rent (800) 888-2000

NetCom 3 Connectivity Without Clutter



A product of
COO
CORPORATION

Linking People and Technology

COMMUNITY NETWORKING
3000 West Street • Suite 200
Beverly Hills, California 90210
TEL: 818/200-0000
FAX: 818/200-0001
WWW: <http://www.coo.com>
© 1997 COO Corporation
All Rights Reserved
Beverly Hills, California
COO Corporation
TEL: 818/200-0000
FAX: 818/200-0001
WWW: <http://www.coo.com>

WHY VIRUSSCAN ISN'T GOOD ENOUGH TO PROTECT YOUR NETWORK.

Source Of Virus Attacks

Gateway 34%

Desktops 47%

Servers 37%

INTRODUCING MCAFFEE TOTAL VIRUS DEFENSE.™

VirusScan detects 100% of the viruses on the desktop. But that's not the only place viruses attack.

Networks make business more productive. Unfortunately, they're also vulnerable to viruses at literally hundreds of points.

But there is a solution: McAfee Total Virus Defense. The only complete set of solutions that protects all the vulnerable points on your network. From desktops and gateway connections to servers and gateways.

If you're not completely protected, you're completely exposed.

McAfee Total Virus Defense uses the industry's top-rated anti-virus technology to provide unparalleled protection throughout your entire enterprise.

VirusScan is the industry's most effective, and most popular, anti-virus solution. With the new Hammer engine VirusScan 3.0 detects 100%* of macro viruses, boot viruses, and other types that attack the desktop.

NetShield, the industry's leading server protection, guards your network by stopping viruses at the server level. **GroupShield** protects gateway users whose dynamic messaging environments are great for transporting data—and transmitting viruses.

McAfee anti-virus products are components of a fully integrated NT-centric systems management solution.

And **WebShield** protects you against viruses from the Internet, the latest and most efficient way to spread viruses.

Enterprise-wide solutions, desktop control.

McAfee's new Security CommandCenter gives you powerful, centralized anti-virus

management. You get enterprise-wide distribution, flexible alerting, and comprehensive reporting—all controlled from one console.

Of course all McAfee virus products include support from AVERK, our Anti-Virus Emergency

Response Team. With research centers worldwide, you get 24 hours a day, 7 days a week online support—plus daily virus file updates.

And, for Internet users, our unique **SecureCast** feature automatically sends updated virus detection files and alerts directly to your PC to protect you from the latest virus attacks—like the new Office97 macro viruses.

For more information, including an interactive CD and a white paper on network anti-virus software, just call us at **1-800-332-9966 dept. 32.**

Because only McAfee Total Virus Defense is good enough to protect your network.

MCAFFEE

Network Security & Management

Download McAfee

www.mcafee.com

fig@mcafee.com

885 (408) 934-4034

America Online: MCAFFEE

CompServe: 60 MCAFFEE

Telephone (408) 938-3223

*Detection rates based on results from independent industry research using third technology and McAfee Research engine.

For (408) 970-5727 © McAfee Associates, Inc. 1997. All rights reserved. All brands and products are trademarks of their respective holders.

Come See Us At Network+Interop, Booth #B55.

The Week in Stocks

Gainers



Losers



PERCENT	
Apple Inc. (J)	16.4
3Com Software Asset	15.2
3Com Corp.	14.8
Sequent Systems	14.4
Computer Concepts Corp.	13.9
Advanced Computer Controls	13.8
Micro Systems	13.7
Brocade Technology	13.6

DOLLAR	
Microsoft Capital Corp.	14.38
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71

PERCENT	
Microsoft Capital Corp.	14.38
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71

DOLLAR	
Microsoft Capital Corp.	14.38
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71
Microsoft Capital Corp. (M)	10.71

INDUSTRY ANALYSIS

Wall Street tickled pink by IBM

Analysts had one word for IBM's recent first-quarter earnings report: **raffish**.

Despite flat earnings of \$1.6 billion — unchanged from a year ago — investors sent IBM's stock surging by more than 10 percent.

Analysts had expected that the strong dollar, which has hurt IBM's earnings in the past, would stoke out growth in foreign currencies once translated back into U.S. currency. But IBM managed to offset that, partly by buying back a lot of its outstanding shares.

"There was a lot of fear that things could go worse," says Robert C. Coleman, an equity analyst at K&J, Voorhees & Co., a brokerage in New York.

IBM also was helped by power performance in its PC and server businesses, which often declines in its mainframe business. In particular, the Lotus Notes installed base grew by 1.7 million sets, reaching 7 million in the quarter.

Analysts say the quarterly performance is evidence that the company is balancing its business units against one another.

"That's their strength, but it's also their weakness because it's hard to focus," says Louis Mazzacchi, an equity analyst at Cowi Kiefer Mattison Co. in New York. But the company is setting itself up for reasonable long-term performance, he says.

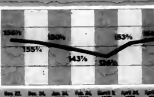
Revenue at Armonk, N.Y.-based IBM was \$17.3 billion, 5% more than the \$16.5 billion reported in the prior quarter. Earnings per share increased to \$2.37, compared with \$2.21 for the same period last year.

"The reason why you want to love the stock is because the management has done what I call an exquisite job of financially managing this company," says Gary Holm, an analyst at SoundView Financial Group in Stamford, Conn.

— Patrick Thibodeau

UPWARD TREND

IBM stock is impressing, thanks to a strong first quarter



Stock	Symbol	Price	Change	Volume	Market	Volume	Market	Volume	Market
IBM	IBM	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
Microsoft	MSFT	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
Apple	APPL	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
Oracle	ORCL	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
SAP	SAP	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
...

Stock	Symbol	Price	Change	Volume	Market	Volume	Market	Volume	Market
IBM	IBM	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
Microsoft	MSFT	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
Apple	APPL	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
Oracle	ORCL	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
SAP	SAP	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
...

Stock	Symbol	Price	Change	Volume	Market	Volume	Market	Volume	Market
IBM	IBM	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
Microsoft	MSFT	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
Apple	APPL	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
Oracle	ORCL	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
SAP	SAP	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
...

Stock	Symbol	Price	Change	Volume	Market	Volume	Market	Volume	Market
IBM	IBM	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
Microsoft	MSFT	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
Apple	APPL	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
Oracle	ORCL	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
SAP	SAP	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
...

Stock	Symbol	Price	Change	Volume	Market	Volume	Market	Volume	Market
IBM	IBM	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
Microsoft	MSFT	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
Apple	APPL	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
Oracle	ORCL	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
SAP	SAP	102.15	+1.15	10.1	102.15	102.15	102.15	102.15	102.15
...

KEY: (P) = New annual high reached in period (P) = Five annual low reached in period
 Copyright © 1997 Computerworld Inc., Boulder, Colo.
 This information is based on sources believed to be reliable, and while accurate efforts are made to ensure its accuracy, no guarantee can be made. Weekly Information and Computerworld assume no liability for inaccuracies. For information on Computerworld's financial research services, call (303) 441-8877.

How to contact Computerworld

TELEPHONE/FAX

Main phone number (508) 879-0700
All editors under otherwise noted (below)
Main fax number (508) 879-8931
24-hour news tip line (508) 879-8955

E-MAIL

Our Web address is www.computerworld.com.
All staff members can be reached via E-mail on the Internet using the form:
firstname_lastname@cw.com.
All IDC News Service correspondents can be reached using the form:
firstname_lastname@idg.com.

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to:

letters@cw.com.

Please include your address and telephone number.

MAIL ADDRESS

PO Box 970, 300 Old Connecticut Path,
Farmingham, Mass. 01901

SUBSCRIPTION/BACK ISSUES

Phone (800) 669-9002
E-mail circulation@cw.com
Back Issues (508) 879-8939

REPRINTS

Phone Michelle Oik, (800) 217-7814

CONTACTING COW EDITORS

We invite our readers to call or write with comments and ideas. It is best to submit ideas to one of the department editors as well as to the appropriate best reporter.

Editor Paul Gilster (508) 879-0700
Executive Editor Matthew Johnson (508) 879-0713

DEPARTMENT EDITORS/WRITERS

News Editor Patricia Swale (508) 879-0700
Services Editor Kevin Fogarty (508) 879-0700
Assistant News Editor Neal Winkler (508) 879-0717
Assistant News Editor Mark Bates (508) 247-4141
Assistant Systems Editor Michael Gaffney (508) 879-0700
Online Editor Johanna Ambrosio (508) 879-0700
Online Editor Judith R. Benavente (508) 247-4141

SECTION EDITORS/WRITERS

Groupware, E-mail, messaging Ben Coz (508) 247-4141
LAN/WAN operating systems Laura O'Neil (508) 879-0700
Network systems management Patrick Doyle (508) 247-4141
Application development Patrick Doyle (508) 879-0700
Thomson Software (508) 247-4141
E-commerce John Kelly (508) 247-4141
Investigation reports Kim S. Nash (508) 247-4141
Apple, software news Lisa Picante (508) 247-4141
Enterprise software Craig Stinson (508) 879-0700
Unix operating systems Jonathan Vogel (508) 879-0700
Hardware, software, Internet Mark Wagner (508) 247-4141
Networking Bob Walker (508) 879-0700

SECTION EDITORS/WRITERS

Mobile computing, social issues Mindy Buegler (508) 879-0700
@Computerworld Stewart Davis (508) 879-0700
PCs, servers, and computers April Landis (508) 879-0700
Security, government Charles Martin (508) 879-0700
Multimedia, high-end storage Tim O'Rourke (508) 879-0700

STAFF WRITERS/WRITERS

Telecommunications Kim Conrad (508) 879-0700
New products Mark Ambrosio (508) 879-0700
Multimedia, low-end storage John Hinkley (508) 247-4141
@Computerworld Patrick Thibault (508) 879-0700
Client-server software Randy Wong (508) 247-4141
Unix apps Mike Wong (508) 247-4141

ONLINE

Column Editor Gene Fogarty (508) 879-0700
Michael Gaffney (508) 879-0700
Steve Hinkley (508) 879-0700
Frank Vogel (508) 247-4141

STAFF COLUMNIST

Frank Vogel (508) 247-4141

DEPARTMENT EDITOR/FEATURES

Technology reviews Janet Connolly (508) 879-0700
Buyer's Guide

SERVICE EDITORS/FEATURES

Buyer's Guide Catherine Cagne (508) 609-7700
Columns Don D. Walker (508) 879-0700
Don D. Walker (508) 879-0700
Management Robert L. Schuler (508) 609-7700
Wiring Alan S. Katz (508) 609-7700
Special events Gary A. Anderson (508) 247-4141

ASSOCIATE EDITOR/FEATURES

Managing Rick Shaw (508) 879-0700
Buyer's Guide Amy Miller (508) 879-0700

IDC NEWS SERVICE CORRESPONDENTS

Paul Brown chief, juvenile issues (508) 247-4141
US correspondent Kristi Evans (508) 247-4141
Hong Kong bureau chief Jim Gaffney (508) 247-4141
Telus correspondent Rick Gault (508) 247-4141

RESEARCH

Bob Pink, senior research manager (508) 879-0700
Sara Rosen, senior researcher Laura Hunt, research analyst, Barbara McLean, senior graphics coordinator, Mary Kade, online researcher

GRAPHICS

Ellen Fleming, managing editor (508) 879-0700
Andrea Foss, assistant managing editor, Christine Accardi, Margaret James, Editor, senior copy editor, Michelle Davidson, Kimberly Gaffney, senior producer, senior copy editor, Pat Hight, David Kamei, Jeremy Selman, Keith Shaw, copy editors, Scott Rasmussen, Melissa Schneider, online copy editor.

GRAPHIC DESIGNER

Toni Munkler, design director (508) 879-0700
Gemmae Michael J. Nigro, Nancy Keady, senior graphic designers, David Leck, photo researcher, editor, Anna Hinton, David Wright, Mary Beth Webb, graphic designers, Bob Brown, John Keady, internships.

ADMINISTRATIVE SUPPORT

Linda Gargano, office manager (508) 879-0700
Carmel Brown (508) 879-0700
Lorraine Wilson (508) 247-4141
Joan Jones (508) 247-4141
West Coast editorial assistant (508) 247-4141

COMPUTERWORLD MANAGER GROUP

Includes Premier, US, Campus Edition, Best Places to Work, Leadership Series, various Series, Executive and Health Care Journal.
Allen Allen, editor (508) 879-0700, Mary Brandt, assistant editor, Anne McLean, Catherine McConkey, John Chalkley, former managing editors, Christopher A. Smith, assistant managing editor and online coordinator, Stephanie Fletcher, art director.

COMPUTERWORLD

@Computerworld is our World Wide Web site. On it, we publish daily news and feature stories that supplement our print coverage. We also have special audio features, such as interviews with industry notables, and the @Computerworld Minute, which is an audio version of the day's top news.

A few times each week, we also have Links Ratings. These are resources related to online and/or print stories. We also have polls and forums that you must register for to access. The rest of the site is accessible without registering.
Contact: Johanna Ambrosio, Online Editor, (508) 879-0700 or johanna.ambrosio@cw.com.

NEED AN INVENTORY SOLUTION?

WE HAVE ONE.

Donating your excess inventory earns a generous tax write-off for your company. And creates college scholarships for needy students. EAL can convert your donation of inventory into financial aid. A GREAT SOLUTION.



Request a free guide to learn more.

Call (630) 690-0010

Fax (630) 690-0565

Email scholar@eduassst.org

EAL

Excess inventory today ... student opportunity tomorrow

Educational Assistance Ltd. P.O. Box 3021 Glen Ellyn, IL 60138-0021

Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

[illegible]

The JOM online edition is located at www.asm-jom.com. JOM also maintains a Facebook and MySpace web site for social networking purposes of ASM members. ASM is a member of ASM International, ASM International is a member of ASM International Association, ASM International Association is a member of ASM International Association.

All these companies believe in standards.
Here's who to call in case of reality.



For a free preview CD, click www.software.ibm.com/mqseries. Or call 1 800 627-2931, ext. 6C7A4040.



EVERY MORNING I GET IN
THOUSANDS OF POUNDS OF RAW FISH

IF MY CUSTOMERS CAN'T CALL ME
I GUESS WHO GETS TO EAT IT?

In the fish business, fresh is everything. That's why I can't afford for my business lines to go down. Not even for a minute. But with GTE, I never have to worry about dropped calls. Their World Class Network[®] is 99.9% reliable. And that means a lot to me. Because I really don't want to be stuck with a boatload of trout. I mean, I like fish — but not that much.



IT'S AMAZING WHAT
WE CAN DO TOGETHER

1-800-GTE-4WCN (483-4926) ext. 313 www.gte.com/business

Get a Year 2000 solution, ASAP.



With R/3 and AcceleratedSAP, your Year 2000 problem can be history in a matter of months. SAP client/server software is, and has always been, fully Year 2000 compliant. And the AcceleratedSAP method has been proven to deliver the fastest implementation possible. In fact, customers that have used it have gone live under budget and in under six months. Now, they're finding out what nearly 7,000 other companies already know — that there's nothing like R/3 to get a better return on information and the maximum return on investment. With less than 1,000 days until the Year 2000, there's no better time for you to find that out than right now. For more information, visit our Year 2000 information center at www.sap.com/y2000. To get information on AcceleratedSAP or Year 2000, call 1-800-283-1SAP.

COMMENTARY

Second (and third) thoughts on Sun's future

David Coursey

One nice thing about what my editor calls my "experiments in pushing the deadline" is that sometimes I get reader feedback on one column before I write the next. For example: "You really had a chip on your shoulder when you were writing your commentary about Sun," began the electronic mail

from a reader commenting on my April 21 column ["What keeps Sun awake at night?"].

The column was written in response to some questions I was supposed to answer as a panel member addressing a group of Sun executives. (To be honest, I didn't attend the Sun meeting. At the last minute, my largest customer's board of directors needed me to make a presentation. So I was especially glad to have written a column that all the Sun people could read. I hope they take heed.)

Did I have a chip on my shoulder when I wrote the column (which can be found at www.computerworld.com/search/AThtml/9704/9704315L0431000r.htm?)

Only, I suppose, if you believe I get personally wrapped up in the company I cover. I do, but only to the extent that I want all of them to be successful, and I fret when I see a company as talented as Sun that can't quite get it together as it faces down Microsoft.

But if I was too negative about Sun in that April 21 column, let me sprinkle a few points of light into this one. To wit: Sun's sales force is a tremendous asset. The company's big customers want

the full "IBM self" of days gone by, and Sun does a great job providing a 1990s version of it. While companies such as Compaq will threaten Sun — and will win in some areas — the PC vendors are years behind in developing those kinds of customer relationships.

Sun also owns the brand name most closely associated with the Internet, at least by techies. Most of those techies were trained on Unix and don't particularly want Windows NT. That could give Sun a few years to figure-out where it's headed.

Still, control of Java remains up for grabs. (There, I'm starting to feel like my old self again.) If customers really take to Microsoft's offerings — and there's little reason to believe they won't —

Sun will be in a bad way. On the other hand, a few tactical blunders in Redmond could keep the market open for a reasonable period of time. Maybe JavaSoft, Netscape, IBM and others will crawl

through the window and else out a defensible position.

Another challenge is that Sun has very little experience with PCs and has a strong bias against outsourcing technology. Sun's case of the Invented Here Syndrome will hurt the company in the long term.

Eventually, the internal costs of these technologies will eat up the company's shrinking margins. When that happens, Sun will face the sort of day of reckoning Apple recently experienced when it justified years of technology work.

So, after considerable thought — and some consultations with people who know Sun's organization and culture far better than I — I'm still not convinced Sun is up to the task of defending Java from the ravages of Microsoft. Nor am I convinced that Sun's problems today aren't a repeat of Apple's problems a few years ago. All the signs are there, but I pray the result won't be the same. ☐

Coursey, an analyst and consultant, is editor of "Insight," a monthly newsletter at insight@coursey.com. His E-mail address is david@coursey.com.

Prediction: Microsoft Office for Java

Frank Hayes

Has Microsoft given up on ActiveX? It sure looks like it from the way Microsoft's top people have clammed up about it. Microsoft's masters may be many things — stubborn, hardheaded, single-minded — but even they can smell the coffee. And right now, the Information Highway to riches is awash in Java.

A year ago, things were different.

Microsoft's tried-and-true, industrial-strength component system had been rechristened as an Internet technology called ActiveX. The mighty Microsoft marketing machine had cranked up, and the A-word was everywhere. And that cute, immature little Java language that Sun was giving away free wouldn't stand a chance — no way, no how, never.

ATTENTION SHIFTS

But last month, when Bill Gates gave a keynote address at the Software Development West conference in San Francisco, he barely mentioned ActiveX.

Meanwhile, a Java show across the street was lugging more attendees than any other development conference. A week later, at Microsoft's own Windows

Hardware Engineering Conference, Java

was everywhere. And ActiveX again got scarcely a mention. The trouble isn't just that ActiveX runs only on Windows, or that ActiveX components are huge compared with Java applets, or that ActiveX has security holes you could empty a Dumpster through. That sort of technical difficulty has never stopped Microsoft from making a successful product.

The real problem is that nobody really cares. ActiveX has become the Microsoft Bob of the Internet development world.

Now understand, ActiveX is ActiveBob

only when it comes to Internet development. Corporate developers are still using ActiveX components for regular desktop applications, with tools such as Microsoft's Visual Basic and Symantec's PowerBuilder and Borland's Delphi. Using them? Heck, developers can't get enough of them.

But on the Internet, there's no contest — it's Java.

And for Microsoft, that's a strategic catastrophe. The company's whole business model is built on owning markets.

If a huge new market called the Internet opens up, Microsoft can't afford to trail for very long. And with ActiveX — Microsoft's No. 1 Internet market-grabber — on the skids, that spells trouble.

HOW TO REMEDY?

So what will Microsoft do to regain some Internet momentum? The answer seems pretty obvious: Office for Java.

Look, forget the denials from Redmond. If Microsoft can't dominate in Internet development technology, the only choice left is to grab market share in

office applications.

Microsoft gets half its revenue from applications. Java probably will be no more desktop than the Apple Macintosh in a year or two.

Sure, there's a technical challenge. It won't be easy to translate all that Microsoft Office C++ code to Java. But Microsoft has already converted its class libraries to Java and is working on Java-tizing its component infrastructure.

And Microsoft already owns all the complex technology it needs for the conversion. Unlike its competitors in the office suite market, Corel and Lotus, Microsoft doesn't have to clone its Windows product from scratch.

Yes, a Java Office might encourage some users to jump from PCs to network computers. But with careful architecting, Microsoft can make sure the Java version of Office runs fine on every version of Java — but runs even better on Microsoft platforms.

Of course, Microsoft still insists it isn't going to port Office to Java. Absolutely not. No way, no how, never.

But then, we've heard that before. ☐

Hayes is Computerworld's staff columnist. His Internet address is frank_hayes@cw.com.



It's about
more than
data storage.



It's
about
protection.

We're thinking what you're thinking: with your data, there's no such thing as safe enough. At Imation, we understand. We're a new \$2.2 billion world leader in information and imaging (NYSE symbol: IMI) and our business includes the former Data Storage business of 3M. With 3M® products by Imation®, you'll continue to get 3M reliability, plus an added understanding of your needs that leads to great new ideas. Like LS-120, the simple, easy-to-use 120 MB diskette technology that's competitive with standard diskettes. And our new DVD technology, which we support with full-service publishing. We sell more 3.5" diskettes, more 1/2" tape cartridges, and more 1/4" and Travan® multi-cartridges than anyone else. Which makes us a leader in more than technology. We're also a leader in keeping your data safe. Call 1-888-466-3466 or see <http://www.imation.com> to find out more about what makes Imation a world leader in data storage.



IMATION



Handles slap shots, birdies and millions of hits.



Building a Website that will attract millions of fans requires a powerful teammate. An IBM RS/6000[®] Internet solution handles many of the busiest Websites around: the NHL, the Olympic Games, the PGA of America, even Wimbledon, to name a few. The reason? Its incredibly scalable UNIX[®] operating system, AIX, gives the RS/6000 the flexibility to rise to any challenge—now or down the road. So, if you're building an Internet site for millions or an intranet for hundreds, we'll help design a winning solution for your business. To learn about all of our RS/6000 solutions, stop by www.rs6000.ibm.com/solutions or call 1 800 IBM-2468, ext. FA057.

IBM RS/6000 and AIX are registered trademarks and Solutions for a small planet is a trademark of IBM Corp. UNIX is a registered trademark of AT&T. All other names are trademarks of their respective owners. © 1999 IBM Corp.

Solutions for a small planet[™]

IBM